OVERSIZE NOTES AND DRAWINGS, 1879-1886

The Oversize Notes and Drawings contain 120 technical documents, primarily drawings, that are too large to fit in standard-size document folders and, in most cases, too large to be filmed at the standard reduction ratio of 14:1. They cover a variety of subjects, but most relate to electric lighting. A few drawings concern telephones and electric railways. Included also is a set of Menlo Park machine shop drawings, dating from 1879 and 1880. These drawings were produced by the staff of the laboratory's machine shop prior to the production of experimental devices and models. Almost all of the drawings relate to work on the electric light but there are a few miscellaneous drawings of the telephone. In order to preserve the integrity of the collection, the few standard-size machine shop drawings have also been filmed on this reel.

The documents appear on the microfilm in the following order:

1. Miscellaneous Notes and Drawings, 1879-1886
2. Miscellaneous Notes and Drawings, Undated
3. Menlo Park Machine Shop Drawings, 1879-1880
4. Menlo Park Machine Shop Drawings, Undated
5. Oversize Drawings from the Charles Batchelor Collection, 1884

MISCELLANEOUS NOTES AND DRAWINGS, 1879-1886

(Reduction Ratio = 18:1)

Edison's Laboratory
Menlo Park N.J. Mch 8
Oct 16th 1879
A. D. Mott Del.

Fig. 1.

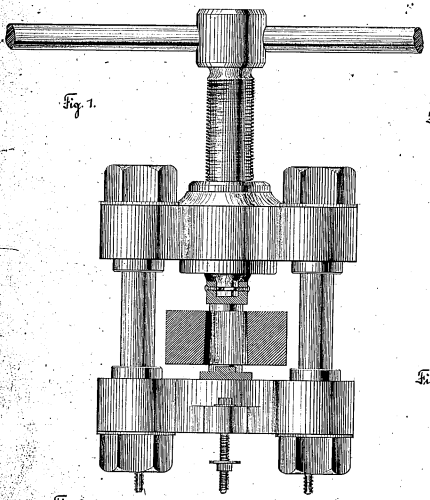


Fig. 2.

Fig. 4.

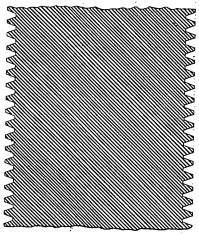


Fig. 3.

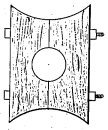


Fig. 5.

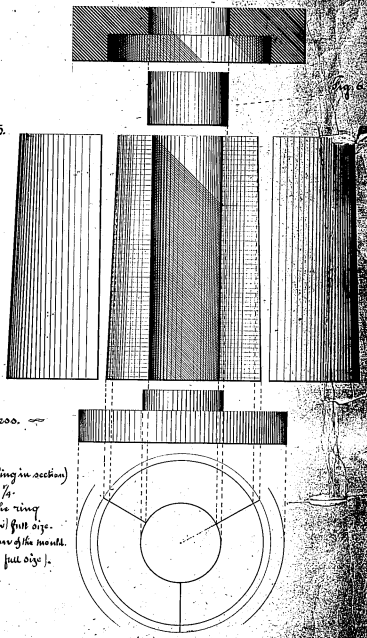


Fig. 6.

The Chalk Cylinder Press.

Fig. 1. Press reduced ¼ (flying in section)
Fig. 2. Extra lever, reduced ¼.
Fig. 3. Blocks to position the ring
Fig. 4. The Screw (in section) full size.
Fig. 5. Elevation & projection of the mould.
Fig. 6. Four arch buttons (full size).

EDISON'S LABORATORY

MENLO PARK N.J.

U.S.A.

October 1879 — 300 Feet Sec

Fig. 1.

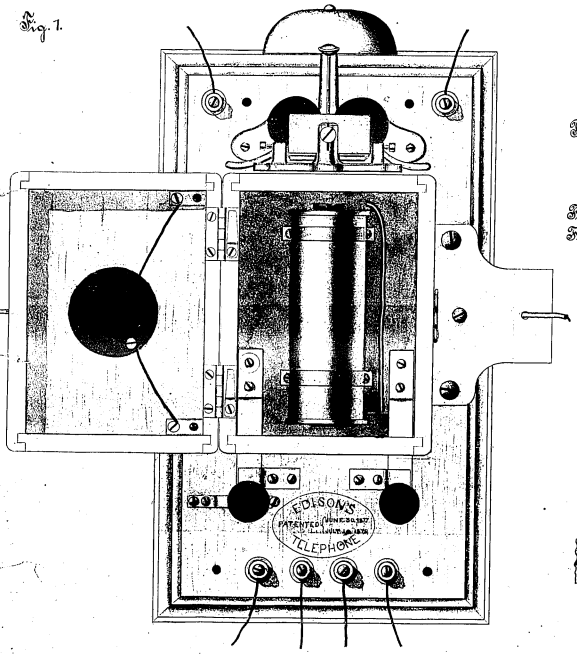


Fig. 1. Front Elevation of Edison's Telephone in colors indicating materials in construction. Brass, yellow. Cast-iron, neutral tint. Wrought-iron, blue. &c.
Fig. 2. The Electro-mutograph receiver - 1/2 full size.
Fig. 3. The carbon transmitter — in section.

Fig. 2.

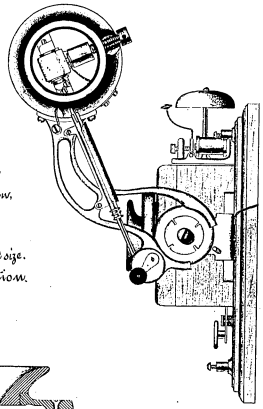
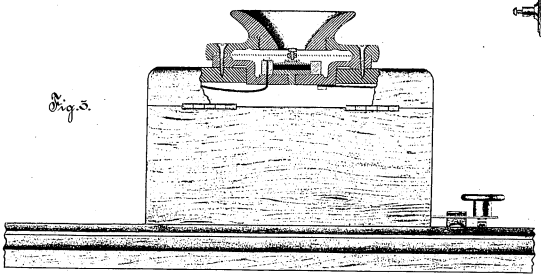
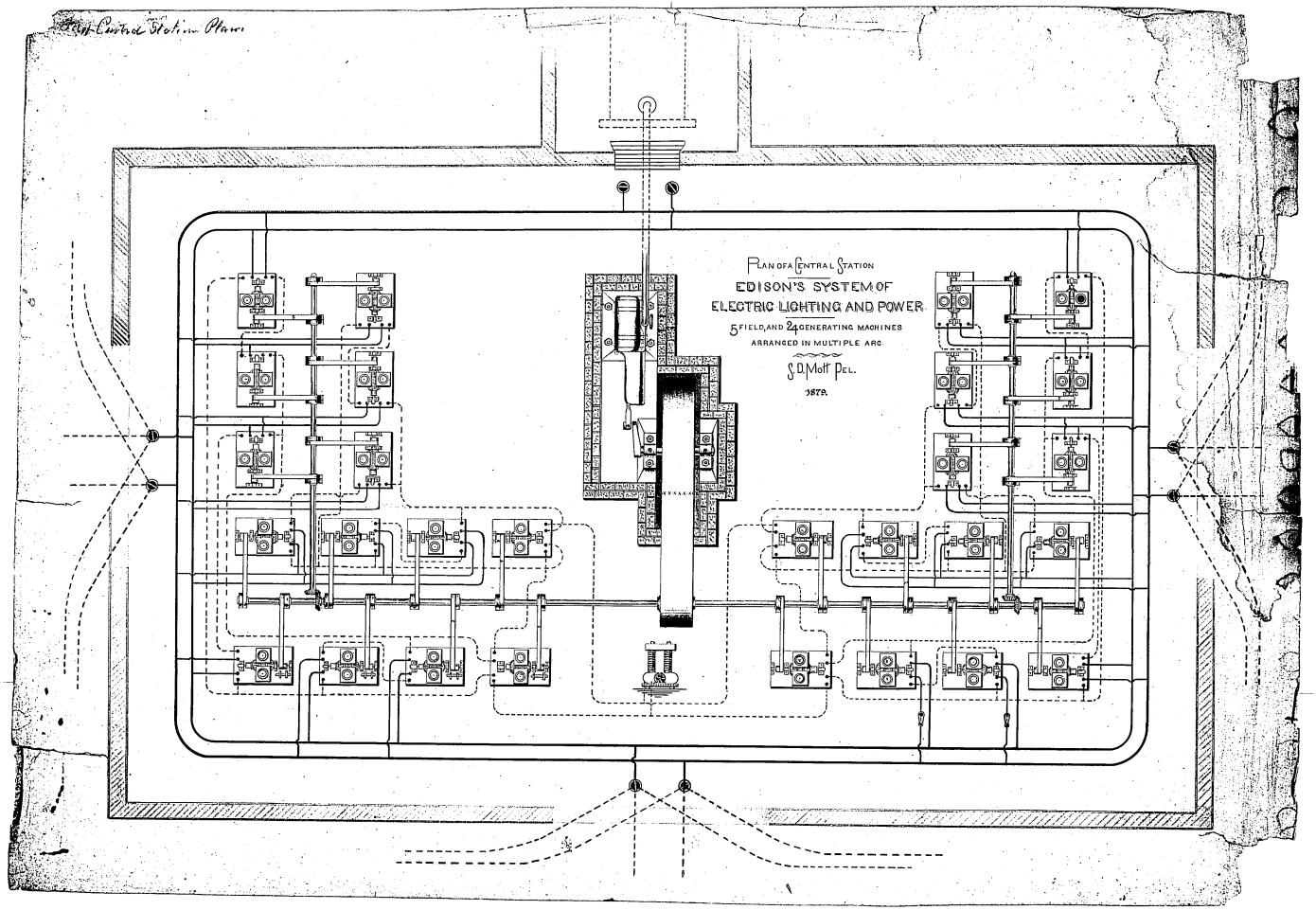


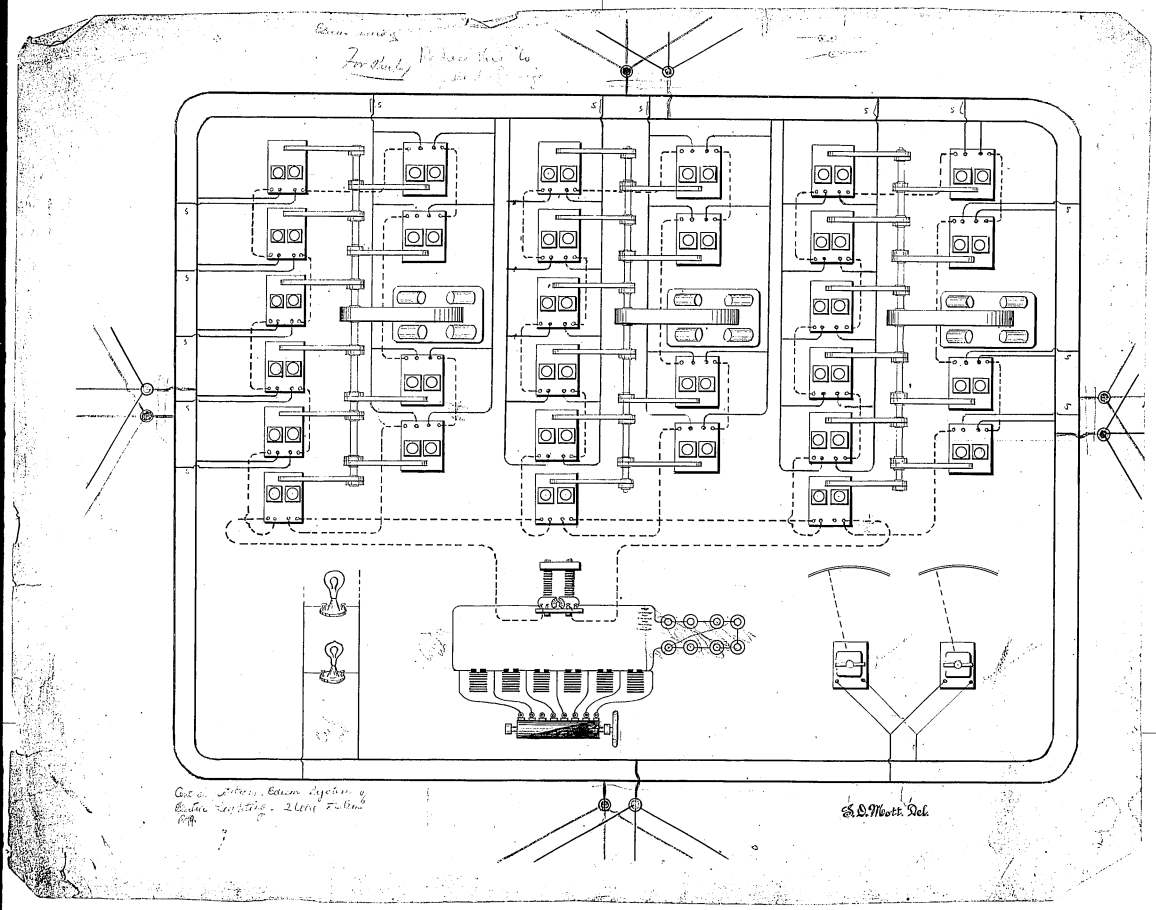
Fig. 3.



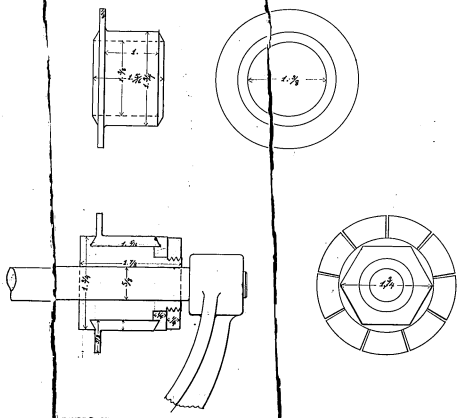
3

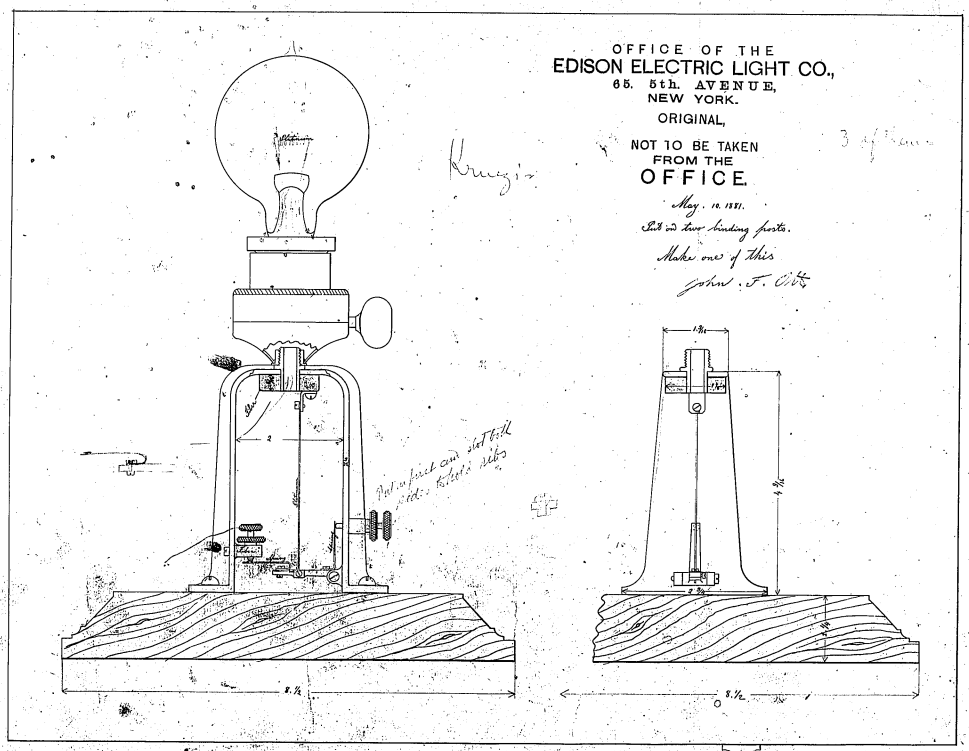
Central Station Plans




E. D. Mott. Del.

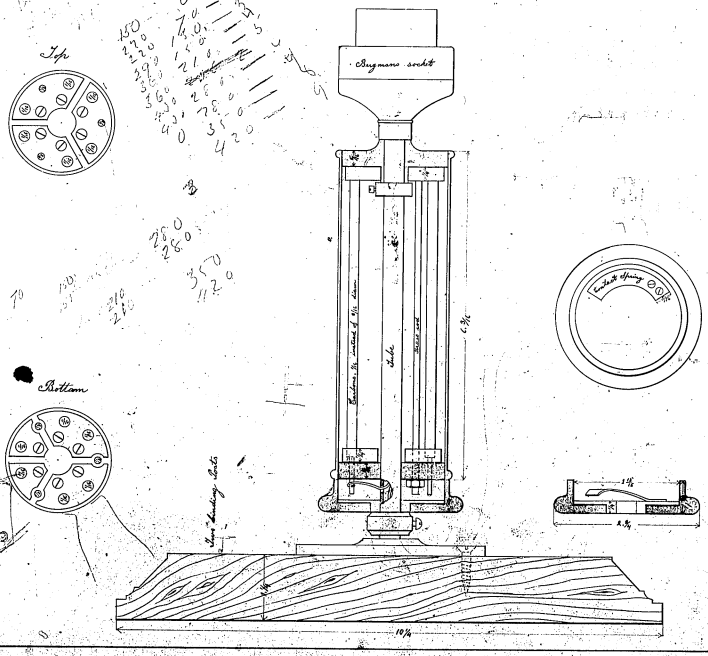
OFFICE OF THE
EDISON ELECTRIC LIGHT CO.,
65. 5th. AVENUE,
NEW YORK.
NOT TO BE TAKEN
FROM THE
OFFICE.
ORIGINAL,
April 21. 1881



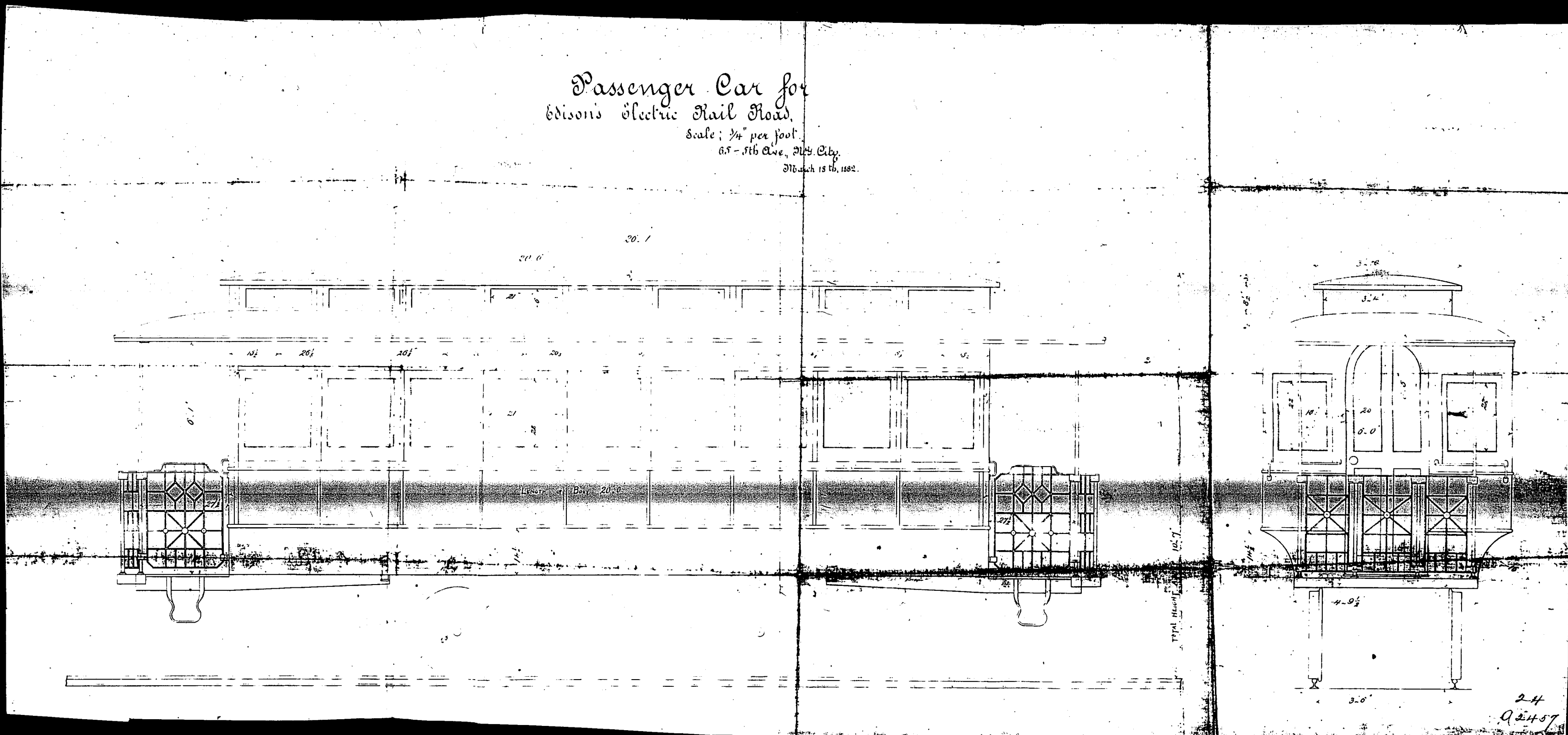

OFFICE OF THE
EDISON ELECTRIC LIGHT CO.,
65. 5th. AVENUE,
NEW YORK.
ORIGINAL,
NOT TO BE TAKEN
FROM THE
OFFICE.
May. 10. 1881.
Sub and two binding posts.
Make one of this
John F. Ott
Krugis
3 of them
Put in foot and set it till
side. Sketch also

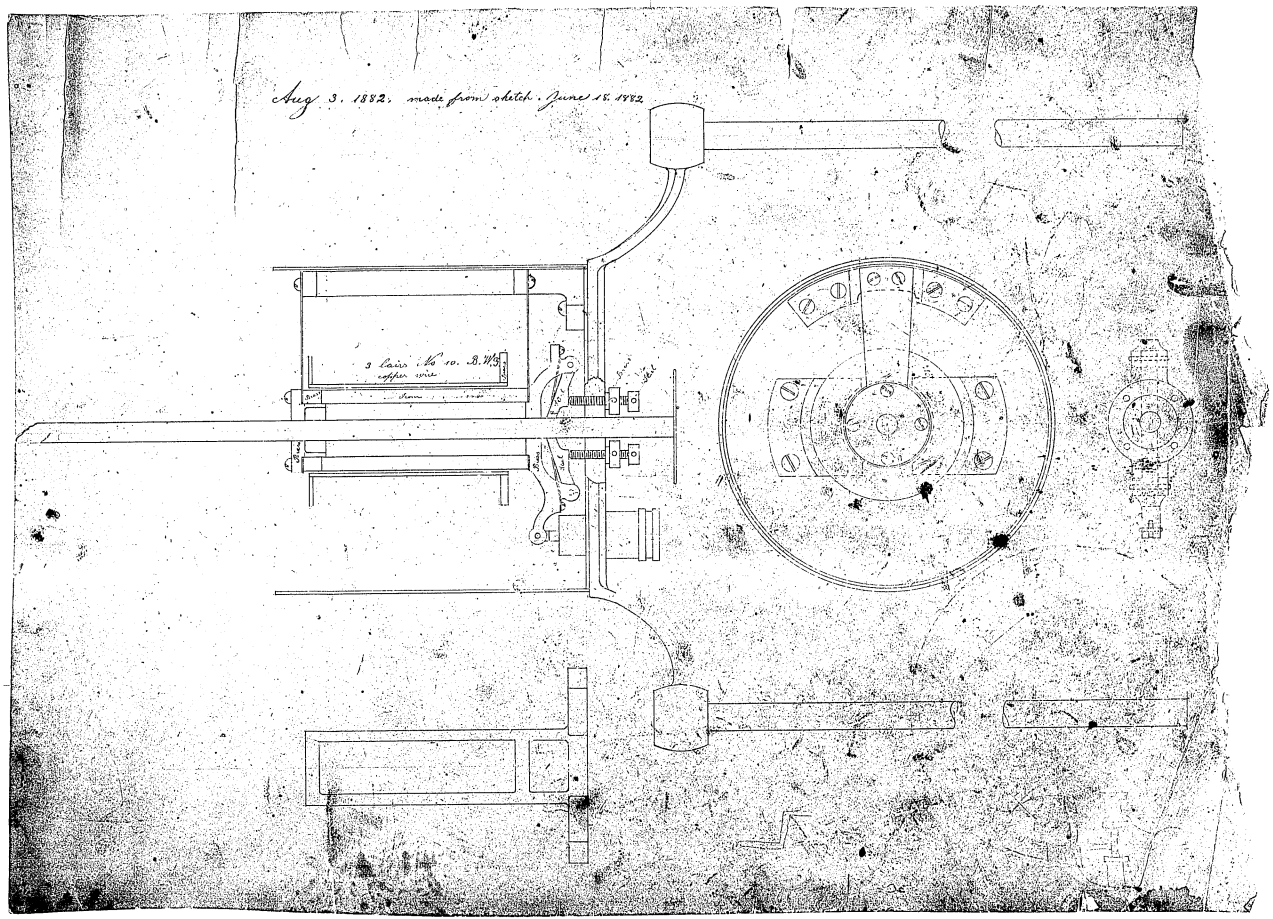
OFFICE OF THE
EDISON ELECTRIC LIGHT CO.,
65. 5th. AVENUE,
NEW YORK.
ORIGINAL,
NOT TO BE TAKEN
FROM THE
OFFICE.

May 11. 1881.



8


Passenger Car for
Edison's Electric Rail Road.
Scale; 3/4" per foot.
65 - 5th Ave., N.Y. City.
March 18th, 1882.
Length of Body 20'0"
Total Height
24
92457


Aug 3. 1882. made from sketch. June 15. 1882
3 bars No 10. B.W.G
copper wire

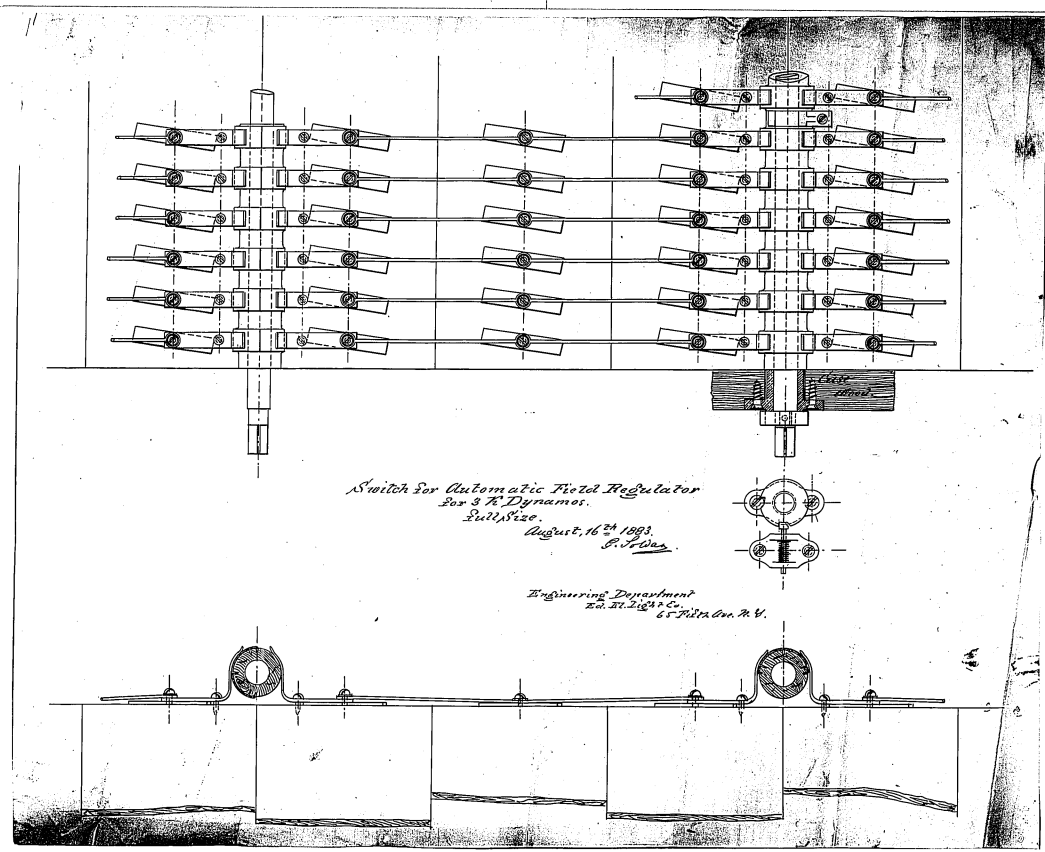

Switch for Automatic Field Regulator
for 3 K Dynamos.
Full Size.
August, 16th 1893.
E. F. Day
Engineering Department
Edison Light Co.
65 Fifth Ave. N.Y.

Fig: 2

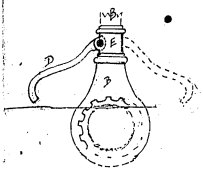


Fig: I

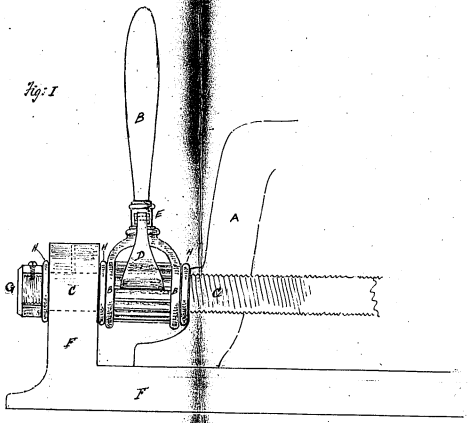


Fig: I ½ real size.

Suggestion for improved belt tightener for Dynamo machines.

Fig: 1. – A. Section of Dynamo base.

B. A lever to work on ratchet principle, to turn the screw C. to turn right or left, & propel or retract the Dynamo.

D. is a falcrum hinged into the collar B. [illegible] cross section in Fig: 2.

E. is a revolving collar upon the lever D. enabling the falcrum D. to be raised & placed to right or left of the cogged drum.

F.F. the present form of rail upon which the dynamo rests.

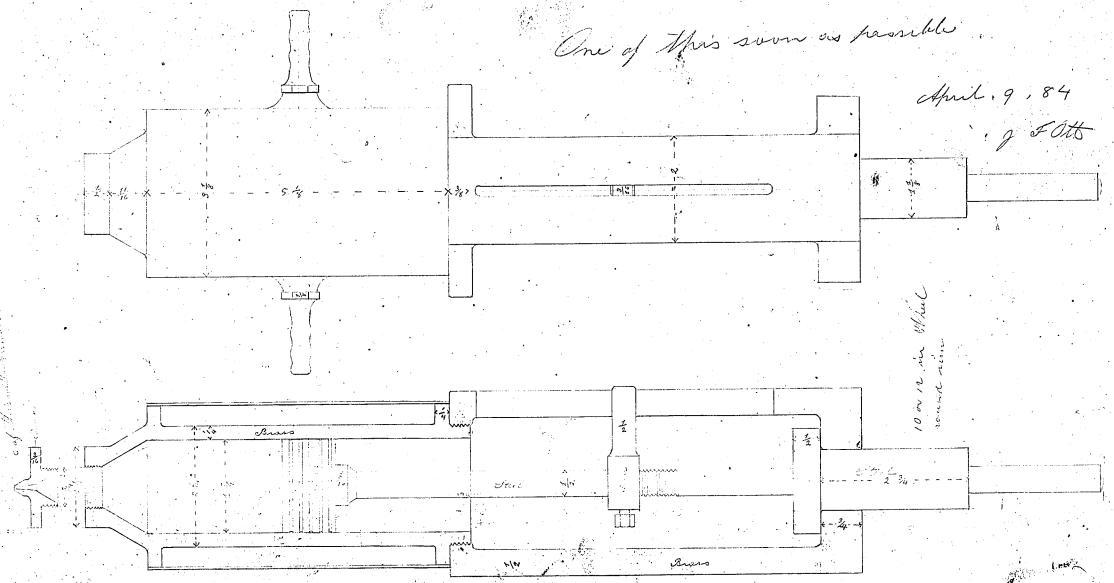
G. A nut to screw on to the grooved end of the screw C. to give a bearing when drawing back the dynamo.

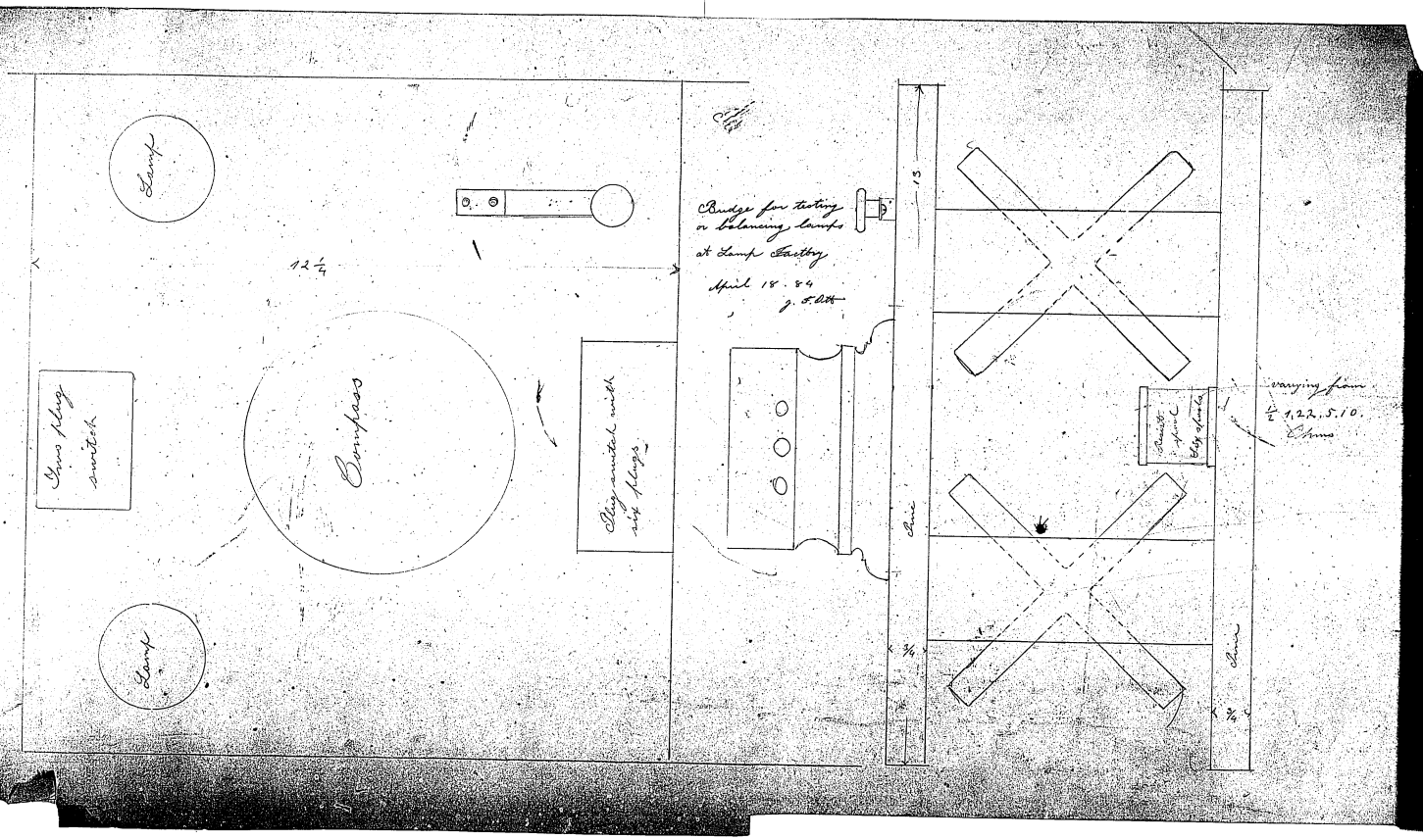
H.H.H. are washers.

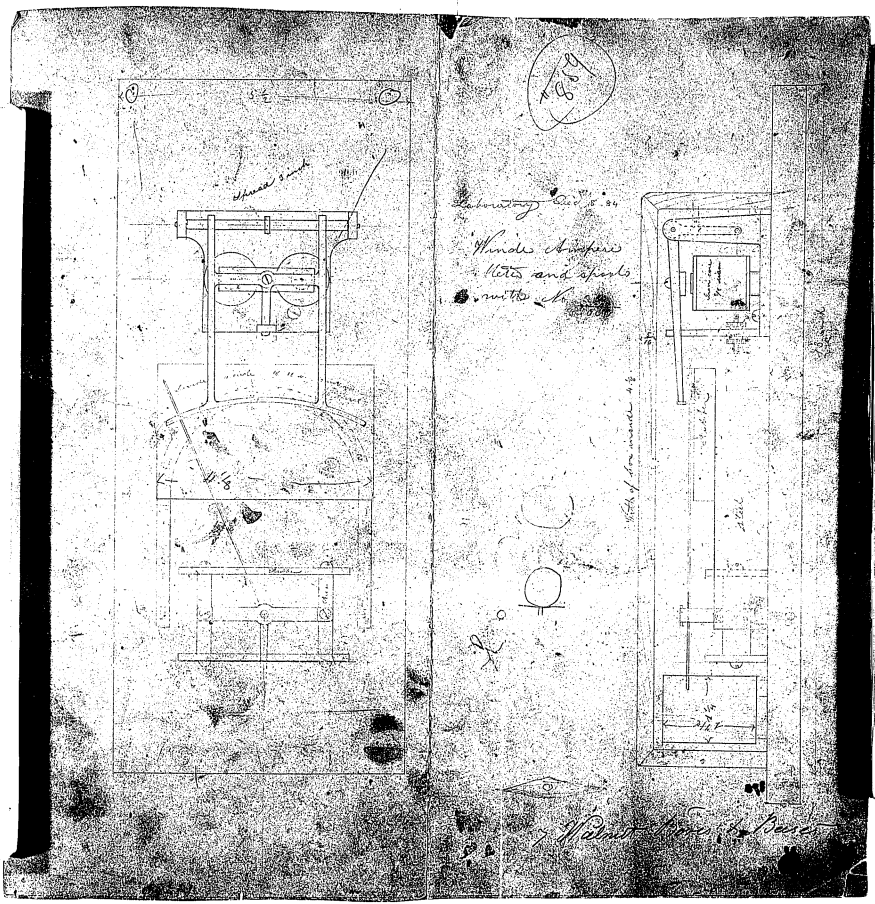
One of this soon as possible.

April. 9, 84

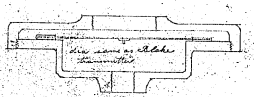
J F Otto

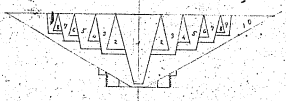


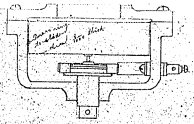

Lamp
Lamp
Spin plug switch
Compass
12 1/4
Plug switch with big plugs
Bridge for testing or balancing lamps at Lamp Factory
April 18. 84
J. S. Ott
15
Line
3/4
Line
3/4
Bridge for C plug switch
carrying from 1/2 1.22.5.10. Ohms

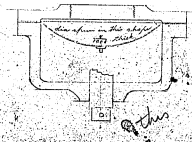

Wheel Sink
Steel
Walter Pope & Bacon

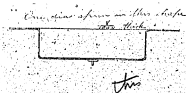
April 9 1885 946

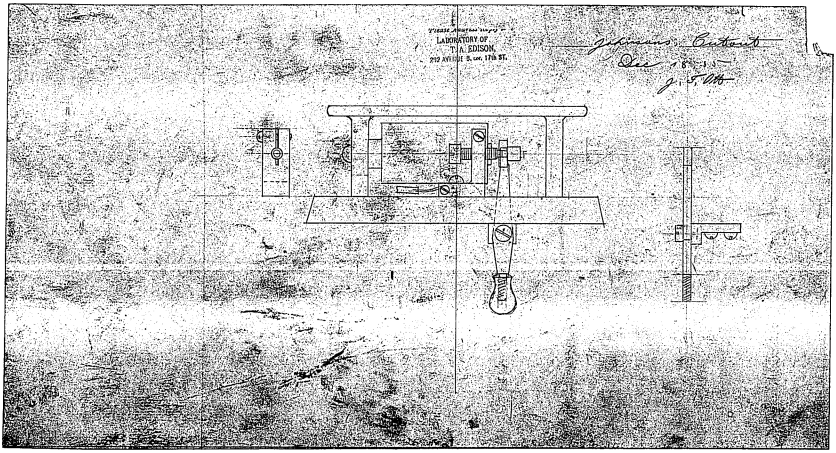


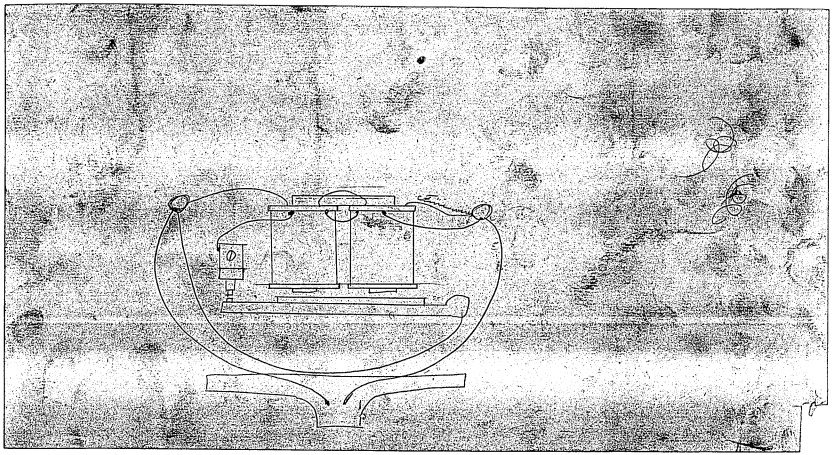


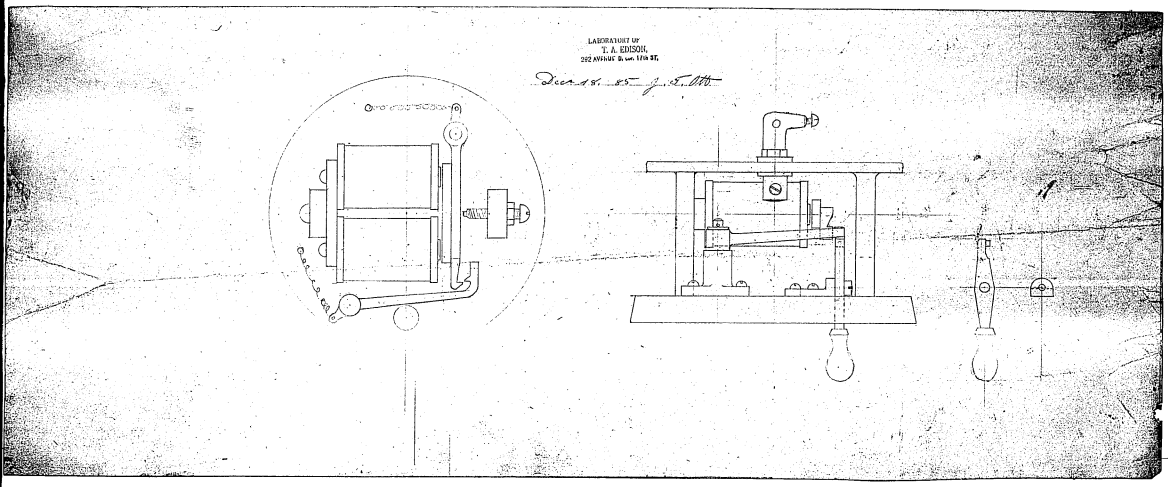


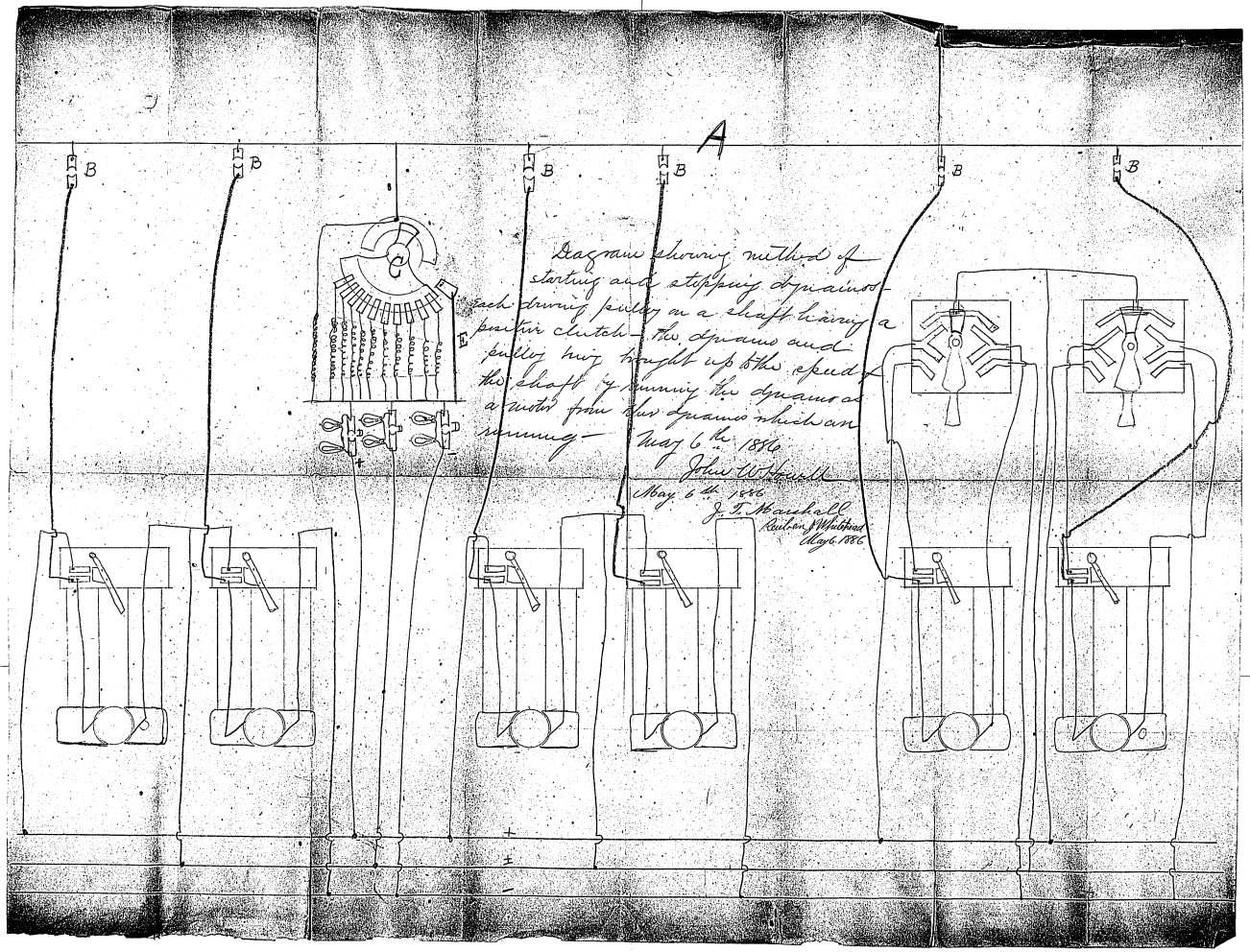


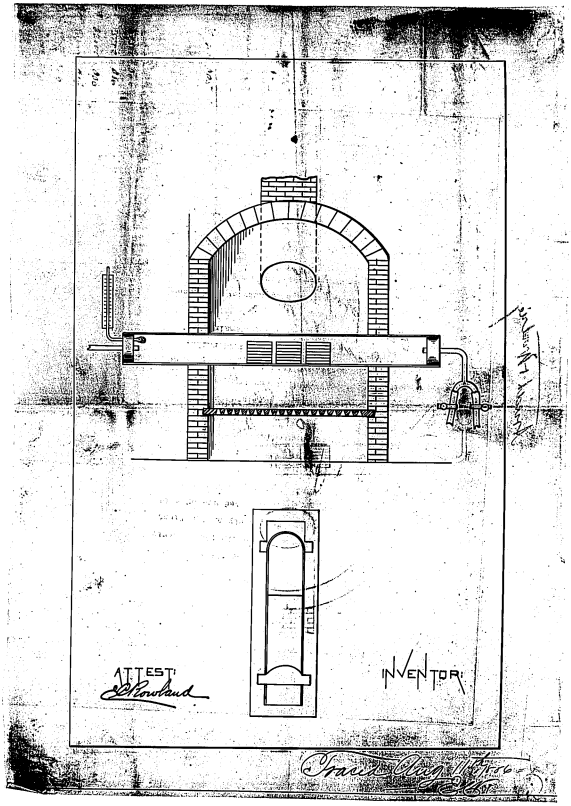


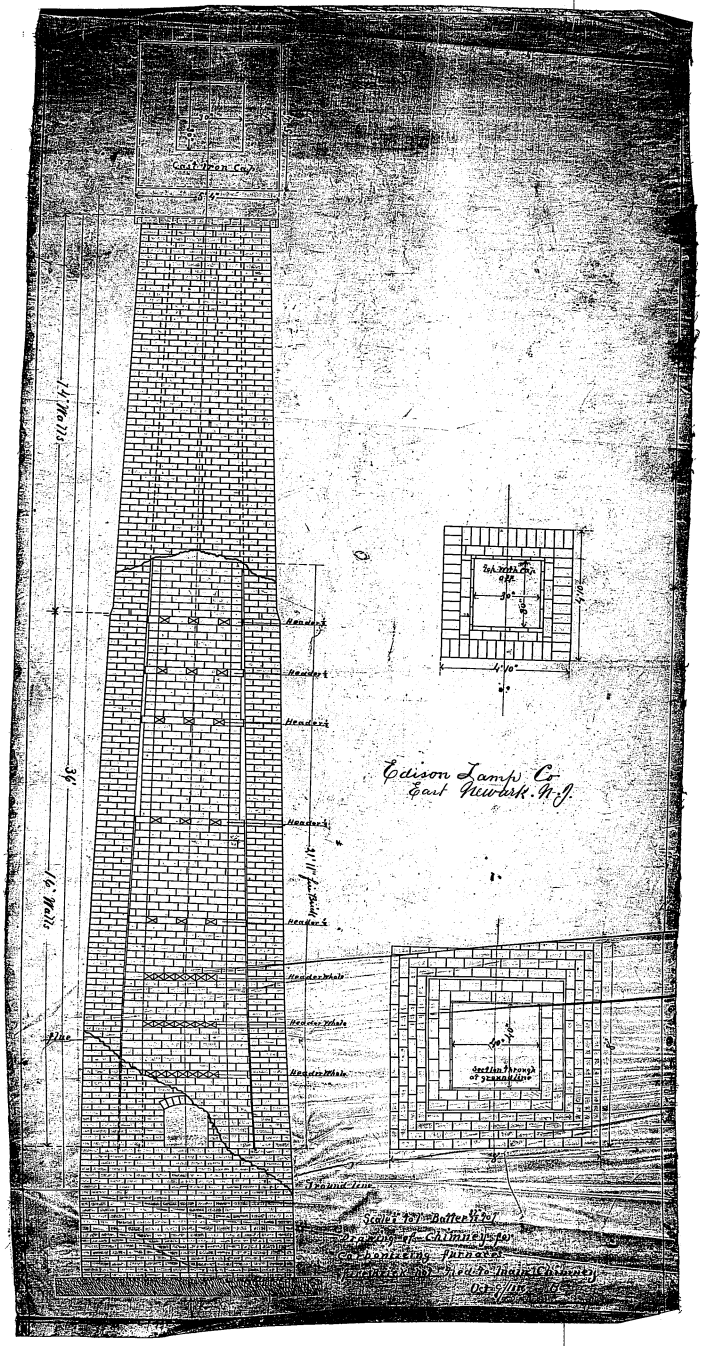

LABORATORY OF
T. A. EDISON,
212 AVENUE B, cor. 12th ST.



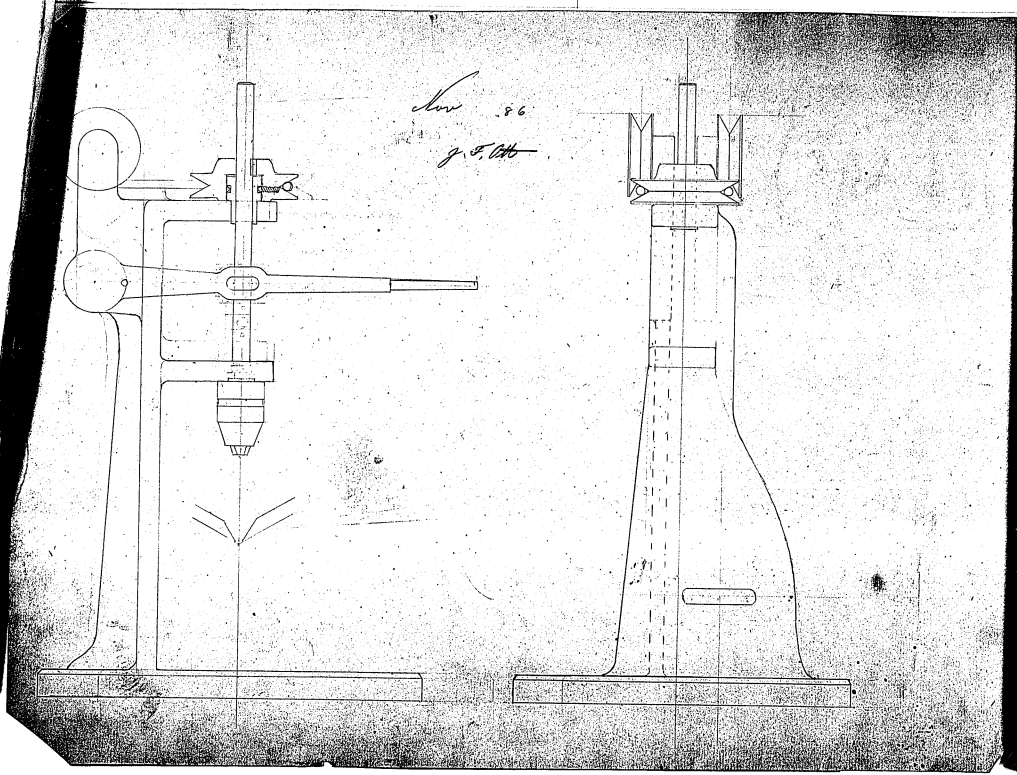

LABORATORY OF
T. A. EDISON,
292 AVENUE B, cor. 17th ST.
Dec 18. 85 J. E. Ott

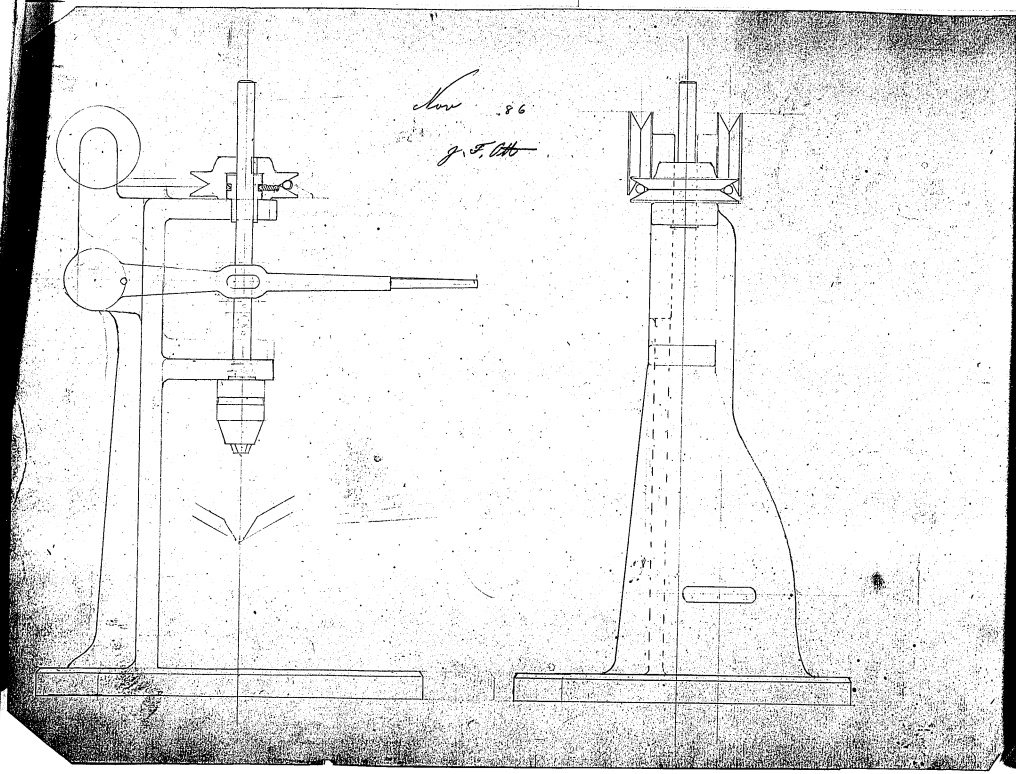

A
B
B
B
B
B
B
C
E
+
±
−
Diagram showing method of starting and stopping dynamos each driving pulley on a shaft having a positive clutch - the dynamo and pulley being brought up to the speed of the shaft by running the dynamo as a motor from the dynamo which is running -
May 6th 1886
John W. Howell
May 6th 1886
J. T. Marshall
Witness
May 6 1886


ATTEST:
INVENTOR:


Coal Pen Co.
14 Main
34
16 Main
Header
Header
Header
Header
Header
Header
Header Whole
Header Whole
Header Whole
Flue
Edison Lamp Co
East Newark, N.J.
Section through of generator
Ground line
Scale: 1/8" = Batter Wall
Drawing of Chimney for
Producing Furnace
Edison Lamp Co East Newark Chimney
Oct 5/06

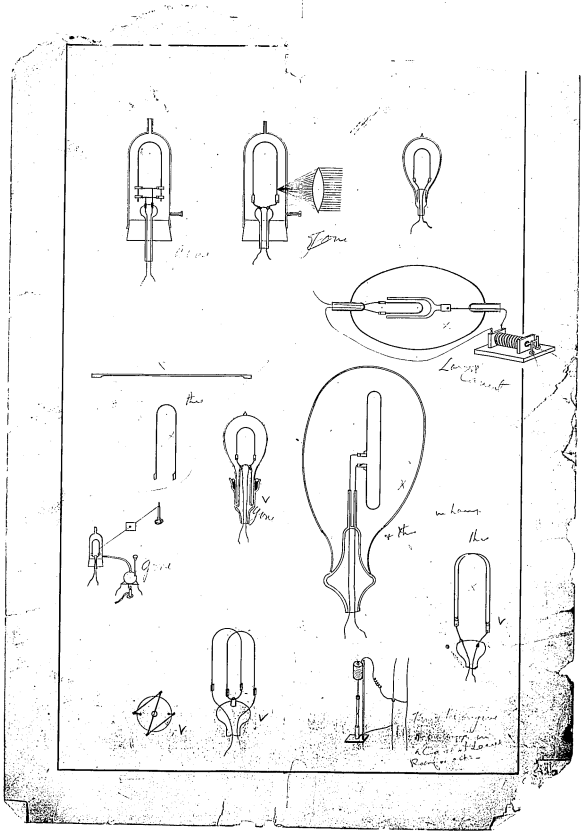
20

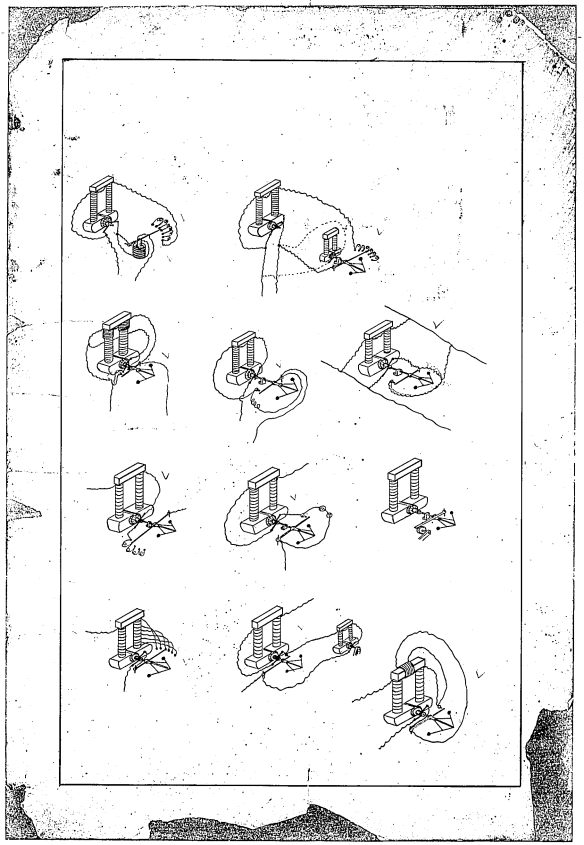

Nov 86
J. F. Otto

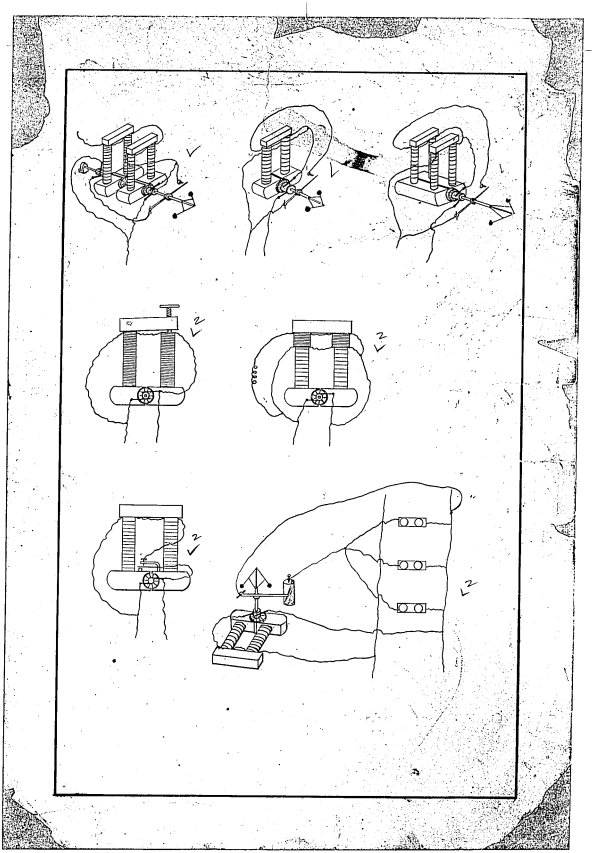

Nov 86

MISCELLANEOUS NOTES AND DRAWINGS, UNDATED

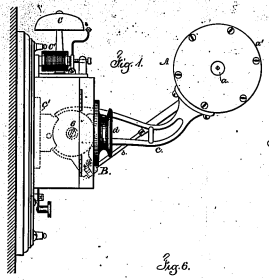
(Reduction Ratio = 18:1)

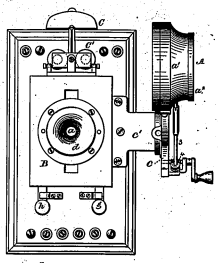


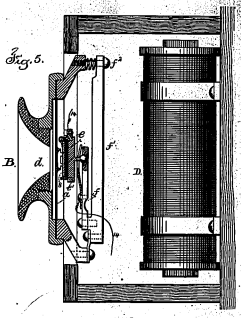


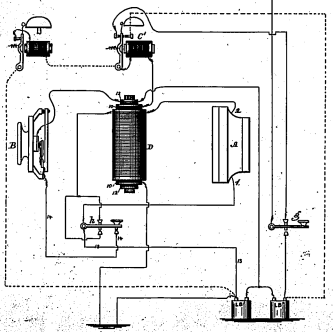


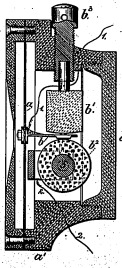
Copy of drawings furnished The Western Electric Mfg. Co.
for Patents in Australia for Telephones. —











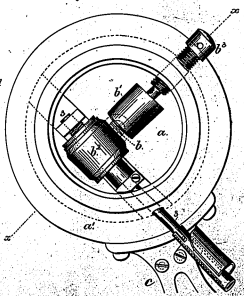


Fig. 7.

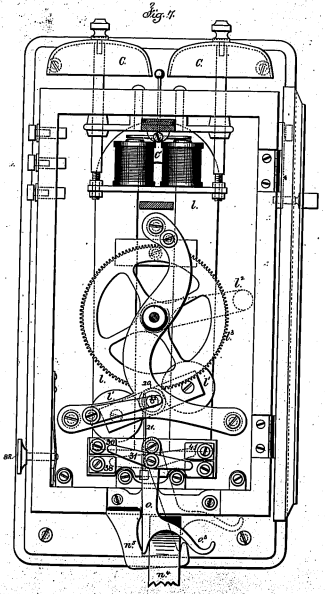


Fig. 10.

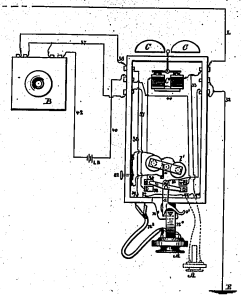


Fig. 8.

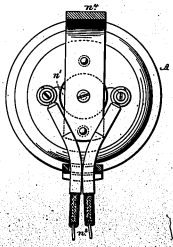


Fig. 9.

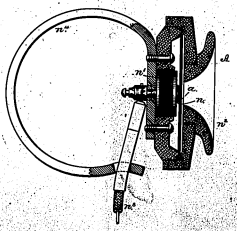


Fig. 11.

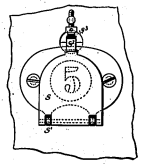


Fig. 12.

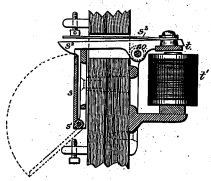


Fig. 13.

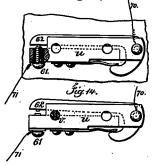


Fig. 14.

Fig. 15.

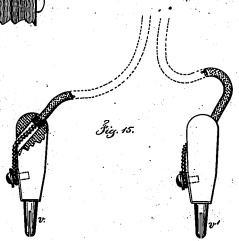


Fig. 16.

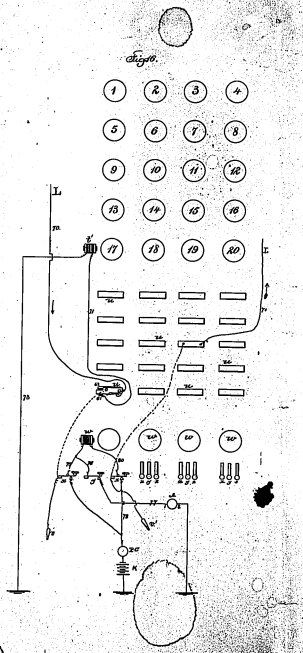
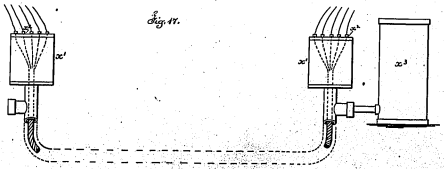
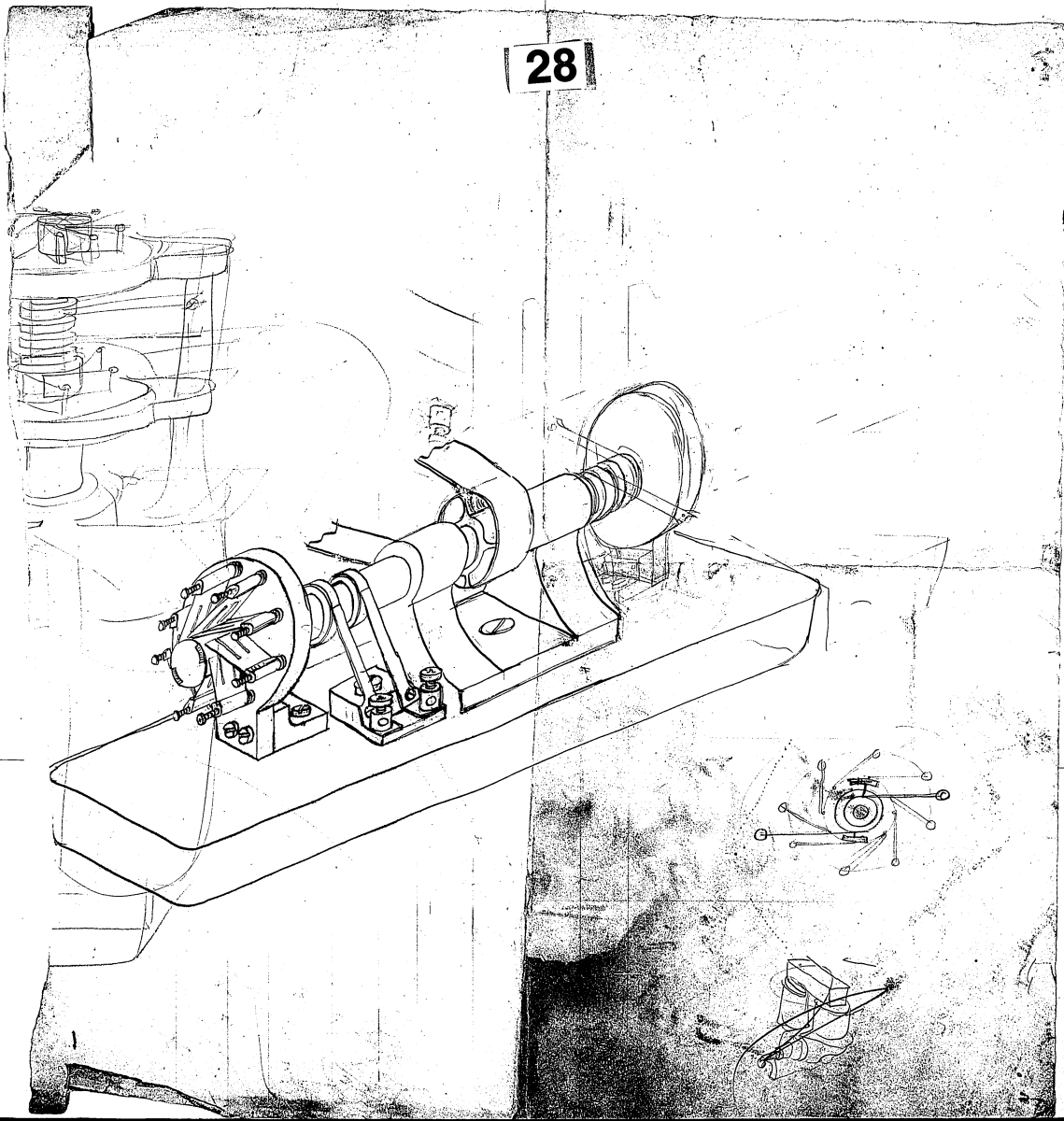
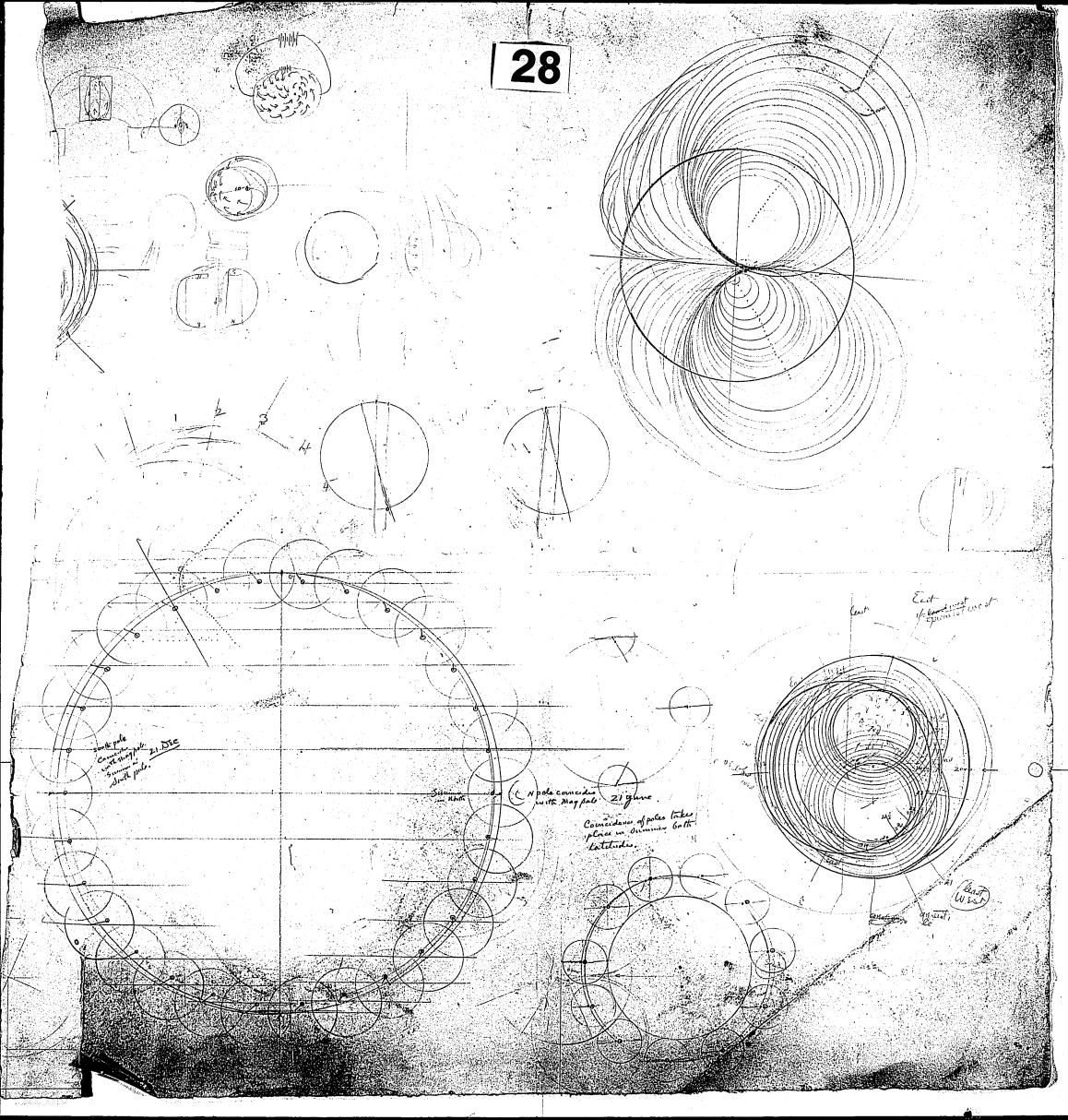


Fig. 17.






North pole coincides with Mag pole Summer North pole.
21 Dec
Summer North
N pole coincides with Mag pole
21 June
Coincidence of poles takes place in Summer both latitudes.
East
East
East
West
West

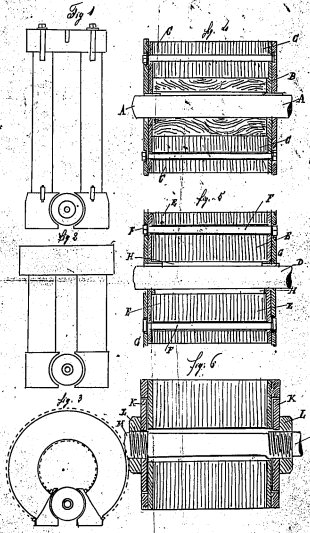


Fig. 1
Fig. 2
Fig. 3
Fig. 4
Fig. 5
Fig. 6

Table of Dimensions, Resistances, Spaces occupied, and Safe current capacities of pure Copper Wires — (Compiled.)

Insulated Wire. — Data of Insulated Wire.

American Gauge B.&S. Number	Diameter to the Inch	Diameter to the Inch	Diameter to the Inch	Feet per Lb.	Ohms per Mile	Safe Carrying Capacities Magnet Wired	Safe Carrying Capacities Armature Wires	Feet per Lb.	Wire Gauge B.&S. Number
0000	460	460	460	211600	160190				0000
000	409	409	409	167805	127000				000
00	364	364	364	133078	100530				00
0	324	324	324	105592	82932				0
1				83694	65733	1024	1008	151	1
2				66372	52132	812	799	120	2
3				52634	41339	644	632	95	3
4	4	4.87	22.1	41742	32784	510	502	75	4
5	5.03	5.82	29.6	33102	25998	404	397	59	5
6	5.66	6.41	36.3	26250	20617	320	315	47	6
7	6.21	7.3	46.3	20816	16349	254	249	37	7
8	7.08	8.	56.5	16502	12966	201	198	29	8
9	7.66	8.42	64.5	13084	10284	159	157	23	9
10	8.34	9.6	82.	10381	8153	127	125	18	10
11	9.2	11.	116.	8234	6467	100	98	14	11
12	10.2	12.8	142.8	6529	5128	79.6	78.3	11.5	12
13	12.	14.	168.	5178	4067	63.1	62.1	9.1	13
14	13.	15.4	200.	4106	3226	50.1	49.3	7.2	14
15	15.37	17.9	275.5	2246	2558	39.7	39.1	5.7	15
16	16.74	19.4	324.7	2026	1629	31.5	31.0	4.5	16
17	17.74	21.33	378.4	1653	1292	25.0	24.6	3.6	17
18	19.5	23.	448.5	1323	1025	19.8	19.5	2.9	18
19	22.2	26.4	567.	1023	812	15.7	15.4	2.3	19
20	25.7	29.7	693.	830	644	12.4	12.2	1.8	20
21	28.3	32.5	920.	766	510	9.8	9.7	1.4	21
22	31.	36.	1116.	93.	405	7.8	7.7	1.1	22
23	34.4	40.36	1390.	1138	321	6.2	6.1	0.9	23
24	36.9	44.6	1649.	1324	255	4.9	4.8	0.7	24
25	38.	47.	1790.	1492	473	3.8	3.7	0.6	25
26	42.	50.5	2100.	170.	7.	3.0	2.9	0.5	26
27	48.	55.5	2600.	210.	105.	2.3	2.3	0.4	27
28	53.2	86.1	3256.	271.3	1763.	1.8	1.8	0.3	28
29	59.	68.	4000.	335.	27.	1.4	1.4	0.2	29
30	63.2	76.8	4860.	405.	1.84	1.1	1.1	0.2	30
31									31
32									32
33									33
34									34
35									35
36									36

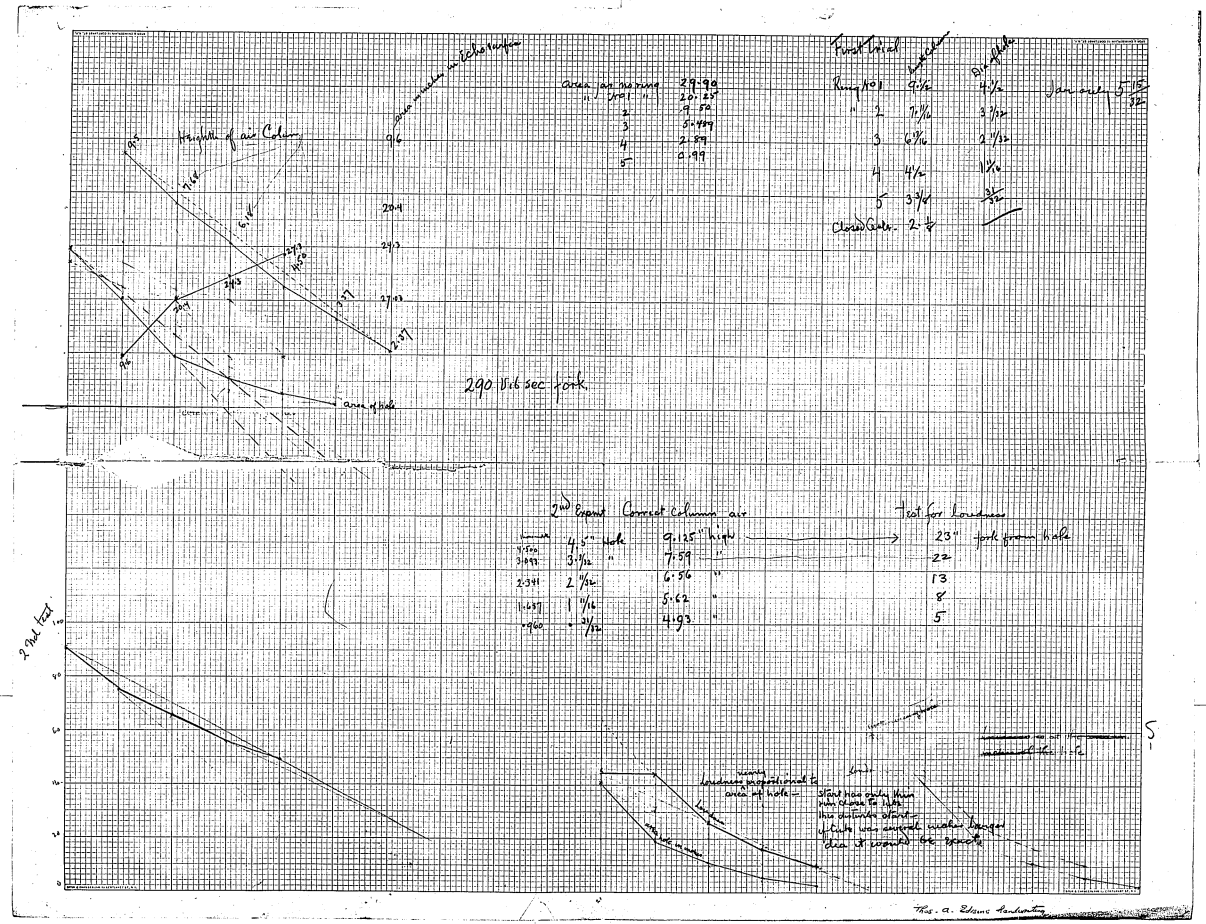
+ .0012 Amp. per circ. mil for magnets. (Stering).

‡ .031 C° Diam.³ (Stering).

Bare Wire.* — Data of Bare Wire.

American Gauge B.&S. Number	Diameter Mills	Area: Circular mils (D²)	Area: Square in. (D²×.7854)	Weight and Length: Lbs. per 1000 ft.	Weight and Length: Pounds per Mile	Weight and Length: Feet per Lb.	Resistance at 75° F.: Ohms per 1000 ft.	Resistance at 75° F.: Ohms per Mile	Resistance at 75° F.: Feet per Ohm	Resistance at 75° F.: Ohms per Lb.	Log. D²	Log. D	Wire Gauge B.&S. Number
0000	460.000	211600.000	160190	639.3	3375.7	1.56	.0490	.2590	20.383	.00007673	5.3253137	2.6907253	0000
000	409.640	167805.000	127000	507.0	2677.0	1.97	.06186	.32664	16.165	.00012030	5.2248000	2.6914302	000
00	364.800	133078.000	100530	402.0	2123.0	2.49	.07801	.41187	12.820	.00019423	5.1241128	2.6921264	00
0	324.900	105592.500	82932	319.0	1684.5	3.13	.09831	.51909	10.400	.00030272	5.0235031	2.6926082	0
1		83694.200	65733	252.8	1335.2	3.95	.11404	.60450	8.8023	.00048994	4.9226935	2.6935619	1
2		66372.000	52130	200.4	1058.8	4.99	.13640	.72352	6.9337	.00078043	4.8213314	2.6942478	2
3		52634.000	41339	158.9	839.3	6.29	.17123	.90449	5.5102	.00124906	4.7212664	2.6949228	3
4	4.096	41742.000	32784	126.0	665.9	7.93	.2160	1.1451	4.3710	.00197511	4.6205733	2.6956659	4
5	5.189	33102.000	25998	100.0	528.05	10.00	.3156	1.6658	3.1687	.00313611	4.5198542	2.6964350	5
6	6.543	26250.000	20617	79.32	418.81	12.61	.39546	2.0881	2.5287	.00498068	4.4191300	2.6971092	6
7	7.950	20816.000	16349	62.90	332.11	15.90	.49871	2.6331	2.0052	.00790294	4.3183973	2.6978419	7
8	9.449	16502.000	12966	49.88	263.37	20.05	.62881	3.3201	1.5903	.01260608	4.2177208	2.6985184	8
9	11.443	13094.000	10284	39.56	208.88	25.28	.79281	4.1860	1.2613	.02000642	4.1170235	2.6991600	9
10	13.180	10381.000	8153	31.37	165.63	31.88	1.	5.2800	1.0000	.03180	4.0162392	2.0000000	10
11	15.960	8234.000	6467	24.88	131.37	40.20	1.2607	6.6568	.7931	.05058	3.9156109	2.1006283	11
12	18.080	6529.000	5128	19.73	104.18	50.69	1.5808	8.3490	.6252	.08058	3.8149069	2.2013327	12
13	21.061	5178.000	4067	15.65	82.63	63.91	2.0047	10.585	.4988	.12841	3.7141956	2.3020936	13
14	24.084	4106.000	3226	12.41	65.525	80.59	2.5908	13.680	.3860	.20880	3.6127970	2.4134415	14
15	27.068	3257.000	2558	9.84	51.956	101.63	3.1155	16.447	.3210	.31658	3.5127777	2.4934619	15
16	30.820	2583.000	2028	7.81	41.237	128.14	4.0131	21.221	.2491	.51501	3.4121076	2.6041316	16
17	34.257	2048.000	1608	6.19	32.683	161.59	5.0651	26.761	.1974	.81900	3.3113729	2.7148668	17
18	40.303	1623.000	1275	4.91	25.925	203.76	6.3911	33.745	.1564	1.3025	3.2106668	2.8052730	18
19	45.390	1288.000	1010	3.89	20.551	256.86	8.0589	43.765	.1240	2.1904	3.0097431	2.9184961	19
20	51.961	1021.000	802.2	3.09	16.315	324.00	10.163	53.653	.0984	3.4920	3.0092338	3.0070008	20
21	58.462	810.100	636.25	2.45	12.936	408.50	12.815	67.660	.0781	5.5535	2.9085386	3.1077006	21
22	65.397	642.700	504.78	1.94	10.245	515.15	16.152	85.283	.0619	8.8208	2.8080089	3.2082309	22
23	72.571	509.95	400.62	1.54	8.132	649.68	20.377	107.59	.0491	13.238	2.7071016	3.3091376	23
24	80.100	404.01	317.31	1.22	6.444	819.21	25.695	135.67	.0389	21.050	2.6063921	3.4098471	24
25	89.300	320.40	251.64	.97	5.126	1032.96	32.400	171.07	.0309	33.440	2.5056928	3.5104977	25
26	99.040	254.01	199.50	.77	4.065	1302.61	42.868	215.70	.0233	54.468	2.4048508	3.6113844	26
27	109.95	201.50	158.26	.61	3.208	1642.55	51.519	272.02	.0194	86.644	2.3039755	3.7119641	27
28	125.61	159.79	125.50	.48	2.544	2071.22	64.966	343.02	.0153	137.56	2.2035496	3.8126896	28
29	141.37	126.72	99.526	.38	2.0064	2611.82	81.521	432.54	.0122	218.36	2.1028452	3.9133946	29
30	160.25	100.5	78.933	.30	1.5840	3293.97	103.30	545.39	.0096	346.75	2.0021608	4.0140731	30
31	180.8	79.71	62.609	.24	1.2672	4152.22	127.27	671.98	.0075	528.95	1.9015128	4.0147264	31
32	202.0	63.20	49.63	.19	1.0032	5236.66	164.26	867.27	.0060	860.33	1.8007171	4.2155221	32
33	226.0	50.19	39.372	.15	.7920	6602.51	207.08	1092.9	.0048	1360.0	1.7000378	4.3161415	33
34	253.0	39.79	31.212	.12	.6336	8328.30	261.53	1379.3	.0038	2171.5	1.5992232	4.4170113	34
35	282.0	31.52	24.75	.10	.5280	10501.35	329.55	1739.9	.0030	3435.5	1.4981862	4.5176330	35
36	315.0	25.00	19.635	.08	.4224	13238.83	415.24	2192.5	.0024	5497.4	1.3971400	4.6182992	36
37	348.3	19.83	15.567	.06	.3168	16691.06	523.76	2765.5	.0019	8742.1	1.2961032	4.7191356	37
38	376.0	15.72	12.347	.05	.2640	20842.40	653.90	3452.7	.0015	13973.2	1.1949772	4.8197867	38
39	393.1	12.47	9.7939	.04	.2112	26102.23	818.85	4323.5	.0012	22188.6	1.0938603	4.9203727	39
40	314.9	9.89	7.7706	.03	.1584	33175.94	1040.7	5492.1	.0009	35227.3	1.0195146	5.0210429	40

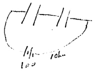
* Calculated on the basis of Dr. Matthiessen's standard nameli. Inch of pure copper wire of 1 ohm. diam. equals 13.59 ohms at 15.5° C. or 59.9° Fahr.

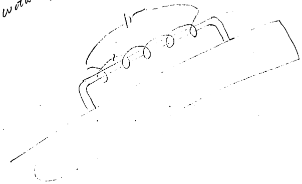

Strength of air Column
area of hole
290 Vel sec fork
area air nozzle 29.90
" " 20.25
2 9.50
3 5.449
4 2.89
5 0.99
Total Load
Ring No 1 9 1/2
" 2 7 1/16
3 6 1/16
4 4 1/2
5 3 1/16
Closed Center 2 1/8
Dia of Hole
4 1/2
3 3/32
2 1/32
1 1/16
31/32
Jan only 5 15/32
2nd Engine Correct Column air
Test for loudness
4 1/2" hole 9.125" high
3 3/32 " 7.59 "
2 1/32 " 6.56 "
1 1/16 " 5.62 "
31/32 " 4.93 "
23" fork between hole
22
13
8
5
2nd test
loudness proportional to area of hole
Thos. A. Edison Laboratory

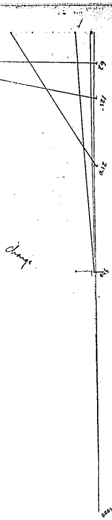
Condenser - charge best open - from best closed.
discharge quicker shortcircuit? given open ck
charge current same direction - Fe opposite direction
Discharge current opposite direction - Fe same direction
better insulation longer hold charge or ~~open~~ Fe better Condr longer hold chge See of so
Open holds charge Fe closed holds charge
charge heats dielectric - Fe charge heats metal.
Discharges slower through high Res ck Fe - low res Ckt.
Charges quicker through Low Res Ckt. Fe chgs quicker thro high Sec
Capacity 1/2 by doubling weight - Fe Capacity doubled by double weight.
Discharge time square of Res 4 times slower double Res - Fe 4 times slower 1/2 Res -
with given Res twice Capacity Requires 4 times time.
with high Res - long time charge Fe with high Res short time to charge or Vice Versa with low Res long time charge

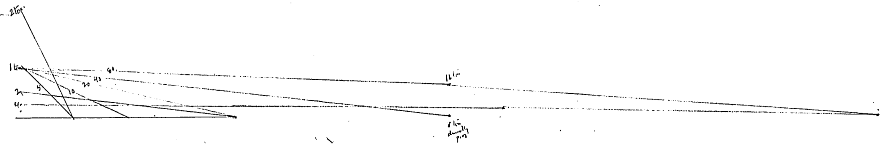
1 volt. 2 v
1 ohm 2
44 -

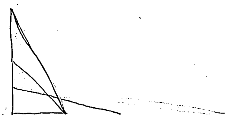
2 / 176 = 88.











Electric Ckt

Length of one proportionate to Emf -
Conductivity directly proportion to metal

Doubling current 4 times the heat.

Doubling current twice magnetizing force

Electricity produces heat in circuit continuously -

Closed circuit no difference Emf between any one point & another except slight amount due to Res that part.

passage E in circuit changes air between the outgoing & incoming

Electricity passes through a liquid Compound of interpolated in circuit

Res of liquid approximately 1 million times greater than the metal & amount current depends on pressure

Res of liquid Conductor diminished by heat,

Two Ends dipping in the ocean very close Res proportion to distance. But at great distance Res independent of distance

heating metal of circuit diminishes amount current by raising resistance.

The two sides of the circuit repel each other,

~~Same~~ two separate circuits with battery in series of ~~two~~ 1 unit Res gives each 44 foot lbs separately put in series - gives on the 2 ohms 88 - ~~also total~~. ~~on double circuit~~ if in Multiple are on 1/2 ohm 88. but if on 2 ohm. 22 - ~~10~~ 1/4 the propelling force,

Magnetic Ckt -

Delta magnetic arc

Doubling Magnetism 4 times the called while doubling magnetizing force -

nothing being static

no elf magnetism

same

Passage of magnetism will discharge it

Magnetism passes through both liquid & solids -

~~Depends~~ Not so high depends on pressure -

Res of same for being increased by heat

Res of an space very close directly as distance at great distance independent of distance.

Resistance to magnetism increased by heat

Two sides of circuit attract

Condr

~~Small~~ Res - quick charge -
High Res - Slow discharge
Juice ~~taken~~ induction of ~~4~~ times quicker charge.
High Res same initial volts slow fall -
Two Condensers Multiple are twice quantity, same Emf - 4 times slower charge -
two in series twice Emf 1/2 quantity twice as quick discharge -
Charge time independent of strength battery ~~only on Res~~ depends on capacity
~~Short high~~

Closed ck Short circuit discharge
If perfectly insulated open will hold charge
The greater the surface Exposed & less thickness greater the charge -
Charge increases with
Close previously ——
discharge on low Res
Condr of Condensers
Rapid bigger the circuit
lower must be Res

Mag

High Res - quick charge
Low Res - Slow discharge ~~Quantity~~
Juice ~~taken~~ induction Fa ~~4 times~~ the charge
low Res. ~~Initial~~ initial volts slow fall.
two high series twice quantity, ~~same~~ 4 times slower charge
Two mag multiple are ~~twice~~ the quantity
1/2 the Emf

} same only on magnetic Res gives

open circuit quick discharge
If perfect Condr closed will hold charge
The less the surface Exposed & the greater the thickness the greater the charge.
Charge increases by greater distance
discharge on low res circuit of iron ~~Thus~~ Rapid the higher res must be

Time of discharge at the square of the length of the Magnetic Circuit with a given Res to discharge ——
discharge also at the square of the Res 1/2 the Res
around core four time longer to discharge -

Electric Ckt

Electricity passing through non-conducting matter it diminishes the length.

The charge matter will take varies with each material law

The amount of E stored in ~~[illegible]~~ matter is directly as the surface of the conductor & thickness of the chargeable matter

The dielectric of a Condenser ought to have a saturation point — & vary with each kind.

~~Another Condenser [illegible] non magnetic.~~

The charging & discharging times of a long Electric Ckt is infinitely greater if away from chargeable matter

pressure necessary resistance to E of chargeable matter —

But with given size wire in current the charging & discharging time in close proximity to chargeable non condtg matter varies at the square of the distance

Conduction of E ~~[illegible]~~ the with cause charge to flow & quickly

The smaller the amount of chargeable matter between the parallel wires of the circuit & the greater the surface of the wire — The greater the charge storable —

The Capacity of chargeable matter stored increases by heat & decreases at intense cold

Conduction of E through compound liquids stored ~~increases~~ by heat, — proportion to the res it bears to the whole circuit.

Magnetic Ckt

Magnetism passing through an iron wire diminishes the diameter & increases its length.

The magnetism ~~[illegible]~~ metals will Ckts vary with each metal —

The amount of E or M stored is directly as the surface of the conductor & thickness of the chargeable matter & inversely as the square of the distance

Iron, some Gaseous substances, & Cobalt & nickel the vary in the point.

~~[illegible]~~

The charging time of a magnetic circuit of any length stored in insulators is away from unchargeable Conductors matter,

pressure decreases necessary to magnetizable matter —

But with a given size wire cons the charging & discharging times when in close proximity to unchargeable Conductor matter varies at the square of the ~~distance~~ —

The greater the unchargeable conductg matter between the two parallel sides of the magnetic circuit & the smaller the surface the greater the charge storable.

The Capacity to store in the iron stored diminish by heat & increases by intense cold

Conduction of mag through a compound solid or liquid stored diminish by heat, in proportion to the res it bears to the whole circuit

Electric Ckt

a great deal of energy can be transferred with little heat in the Conductor

Heat is as the square of the Current

when the internal res of source is equal to external maximum amount available outside.

a static device may be charged from ends of circuit (1) Condenser

If such device have plates separated it will hold chg indefinitely —

If poles closed charge goes off as heat & matter is free

a sound is heard when charg & discharg the Condenser

1 cell gives one pressure
2 cells two pressure —

2 cells will overcome twice the space in liquid

Charg matter between each circuit quantity or work stored is in proportion to surface & thickness of matter.

Rapidity of discharge at the square of the thinness —

E passing through heated wire heats it thus

Magnetic Ckt.

a great deal of energy can be stored up with little heat in the iron

when the res of magnetic circuit is equal to air space maximum magnetic arc or greatest length of air space permissible —

a static permanent magnet may be charged from magnetic arc

If such pair may have poles closed it will hold charge indefinitely —

If poles open dormant go off but probably would if whole of steel was Cass hard & pole piece off — the soft piece probably acts as a keeper by induction through air space,

a sound is heard when charg & discharg a magnet.

1 magnet gives 1 magnetic pressure
2 " " 2 " "

2 magnets in series will overcome twice the air space —

Charging iron by wire work stored up proportion to smallness of surface & thickness of matter,

Rapidity of discharge at the square of the thickness —

Magnetism passing through the steel magnetic ckt costs it more —

Heat.

Expands matter through which it passes –

Heat stays longest in large wire + longer as it is a poor conductor + greater capacity for heat

Electricity

Electricity should ~~disappear~~ lengthen + contract in dark

instantly disappears as from expanding matter.

Magnetism

ditto,

Magnetism stays longer in large wire as it is a better conductor + greater capacity for magnetism

Electricity — Magnetism

Chargeable matter sets itself axially between ends of current — + magnetizable matter equatorially

anything attractable by poles of E current

an Electric Condenser has superimposed charges —
an Electric Current should be a solid conductor
If electric force acts on a body it must be charged with electricity
Electricity can be insulated by a perfect non conductor.
Insulating Cement or Electric cement gives a better insulator or bad conductor

Conducting matter cannot be charged by E

The best charge & Cc compound for E —
Conclusion The better the insulator of Condenser the larger the quantity of charge + insulated charge
The amount of E stored in charge & Cc matter depends on the Emf of E independent of quantity —
Energy = any Electric Source depends on Emf & not Quantity

If there is no saturation for a dielectric there probably is but this can be made greater by doubling the amount but ~~East~~

Electricity can only pass through liquid insulators when they are liquid

Electricity Causes decomposition of compounds through which it passes.

If passage of E through a liquid produces heat

If heat going from a hot to a cold junction produces E

~~Magnetic matter~~
Electro chargeable matter should act — etc. of equatorially between magnetic poles + magnetizable matter axially
+ Electric unchargeable matter indifferently.

should be repelled by magnetic comp + vice versa —

Magnetism should have an insulator

magnetism should be insulated for a time — perfectly with insulators
If magnetic conductor instead of perfect insulator magnetism would be lost
Magnetism transmitted with insulator perfectly with the length
Magnetism can be insulated
by a perfect conductor.

Conducting matter can be charged M —

should be the best of M

The amount of Stored M in it depends on the Conductivity independent of Emf —
Energy may depend on Current & independent of Emf —

There should be none for ~~[illegible]~~ now.
This is for now but you can double the amount,

Magnetism that passes through solids can not pass through when liquid —

Hence Magnetism should produce Combination in liquids or Solids which it can pass.

passage of magnetism through a liquid should produce cold
The magnetism going from a cold to hot junction should produce E

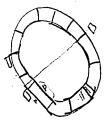
Then making fine handles of dielectric should lengthen the discharge in an Condenser; now insulated from conductor.

notes —
If field mag of Dynamo ~~[illegible]~~ with no back be enveloped field pieces + all with solid Copper say 4 inches thick it will be charged up to saturation gradually by the armature armature that way without any External Energy + the Volts will fall with the load + can be regulated by opening the Copper or Counter winding probably upon how in charging —
If we double the length of the Core we can have 4 times the air space ~~after the Res which~~ whose Res should Equal the magnet,

The small the Source of E Res + greater the outer Res greater the Energy available

If making magnetic cement of very fine wire to quicken the discharge + insulated from each other

The small the Source of M + the lower the outer or air Res the greater the available Emf of force.



10 cand each

E	m
680	420
530	570
490	610
530	570
450	650
610	500
370	530
540	560
390	710
540	560
540	560
610	490
6450	6030

greatest possible difference 300 cents.

99.0
12.10
99.0
20) 22.0 (11
20
2.0
2

11.80
10.20
50) 1.60 (.2

2230
2170
60

5 Cents each

E	C
290	260
310	240
230	320
260	290
260	290
310	240
290	260
220	330
340	210
240	310
240	310
310	240
3300	3300

5.00
5.00

6.10
4.90
440) 1.20 (.3

E -
10 candies B highest & 10 lowest,

470	630
670	430
660	440
460	640
510	590
620	480
460	640
610	490
620	480
390	710
700	400
530	530
6720	6480

1320 880
9.50 12.50
2270 21.30
22.70
44.00

2270
2130
40) 14.0 (3.5
140
200

3.5
7.5

1210 990
11.40 10.60
2350 20.50
2300

4 40
8 36
6 16
180 920
92.0
11.0

40) 300 (7.5
280
200

125
75
220

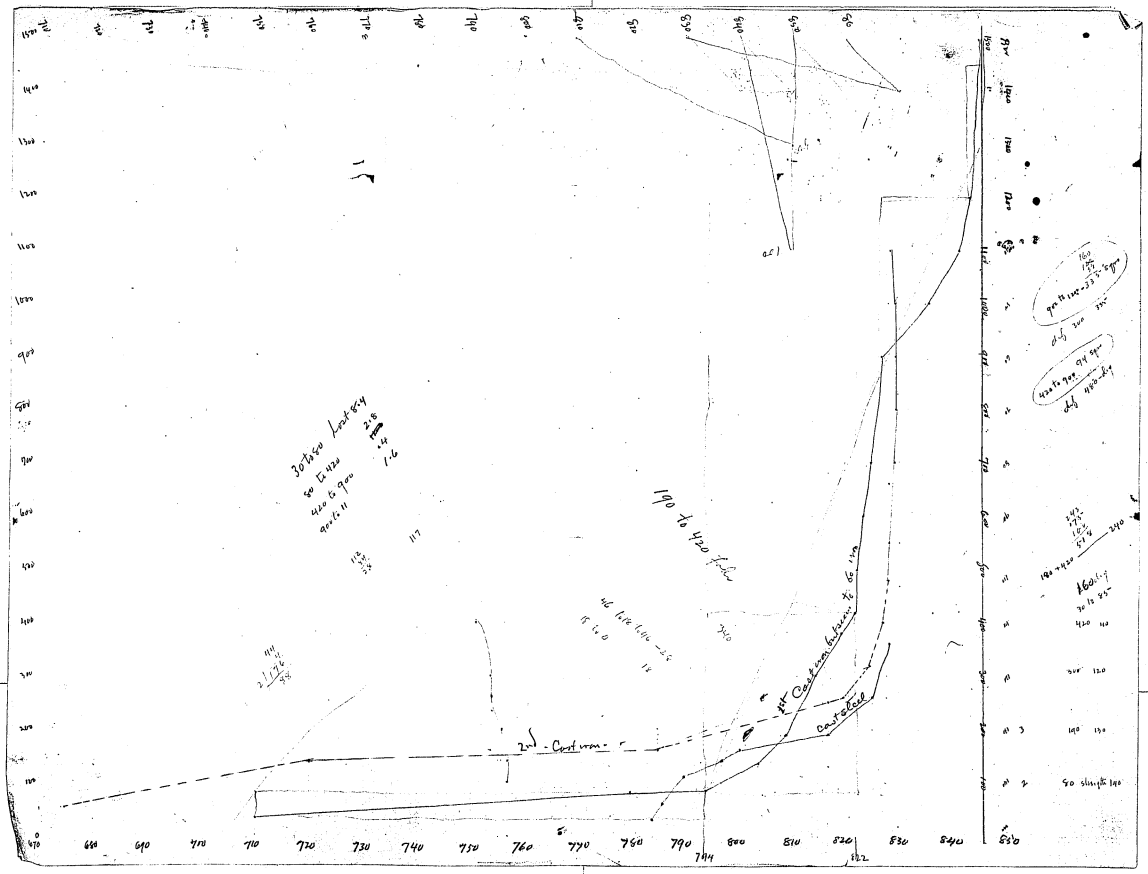
121
99
220

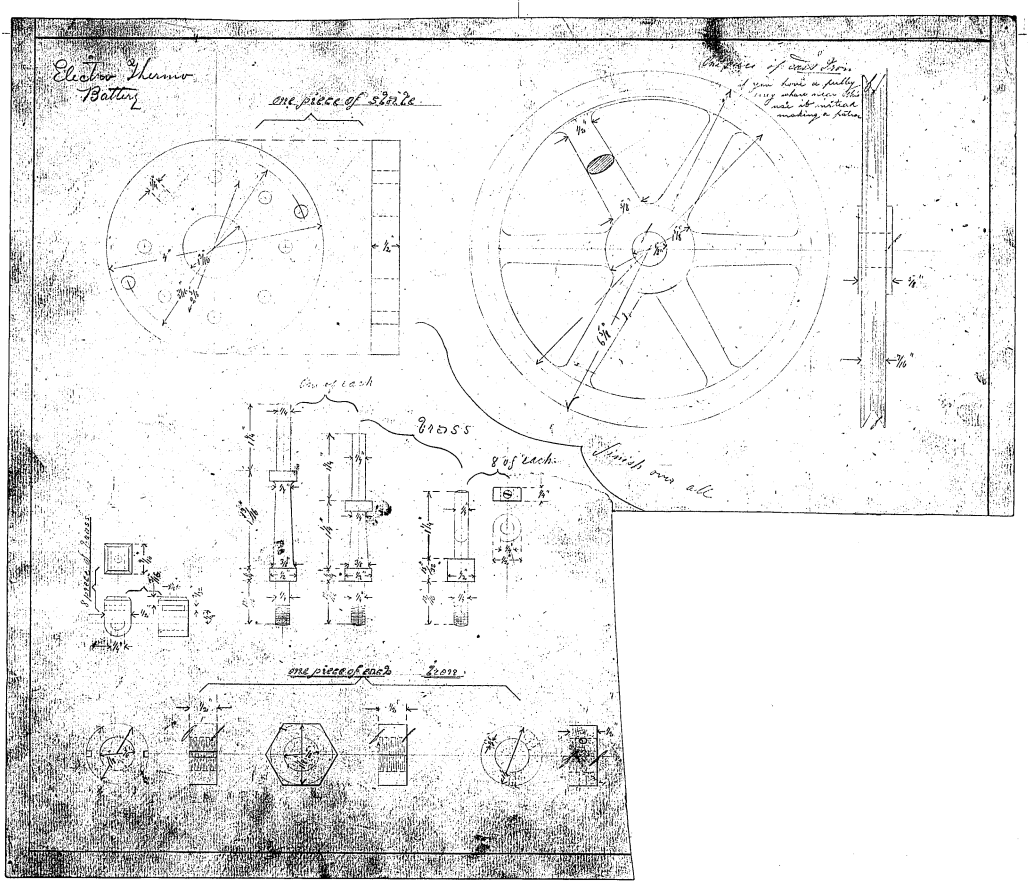
1 6
2 7
3 8
4 9
5 10
15 40

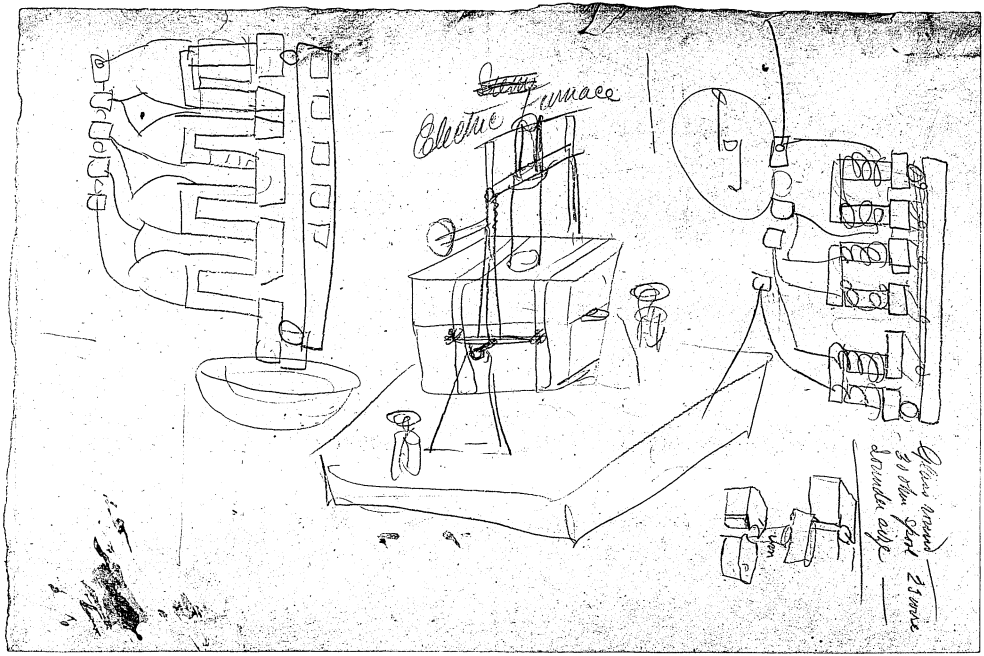
2270
2350
4620
4 1155
114
40) 2350 (58.75
4 1155 106
577 20
522
55

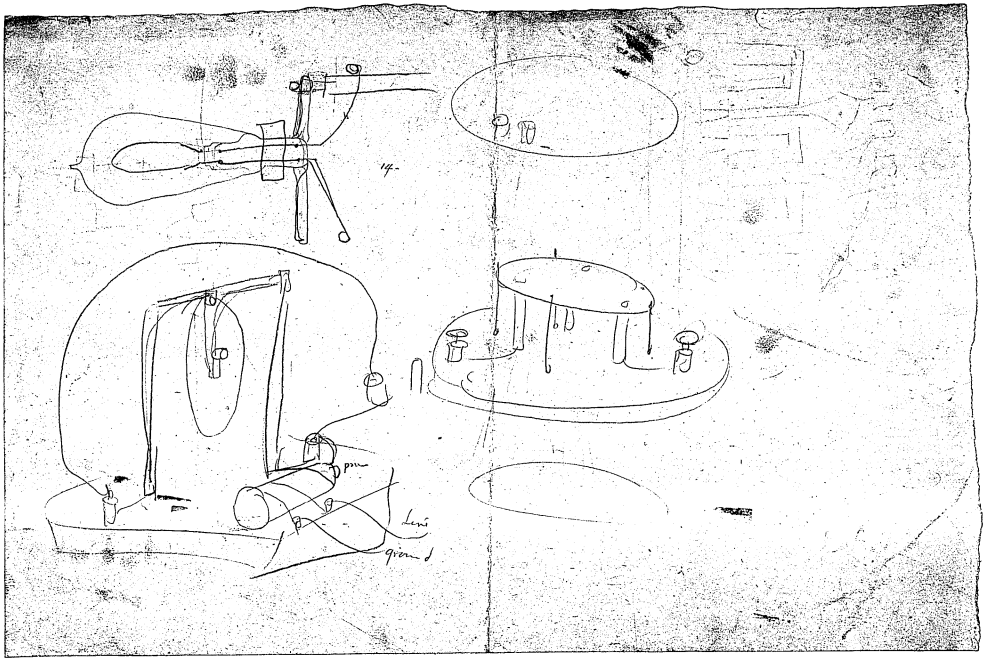
2130
2050
4 4 16
2 1045
522

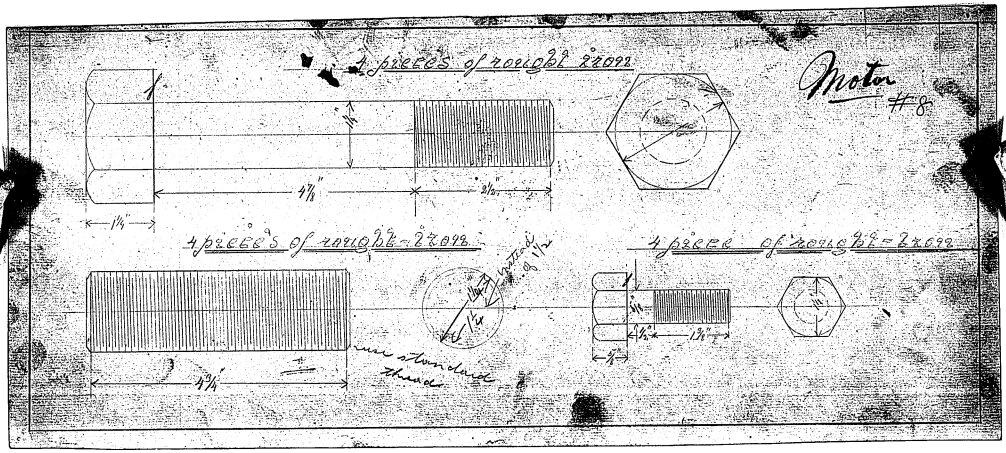
160) 300 (1.87
160
1280
1280
120

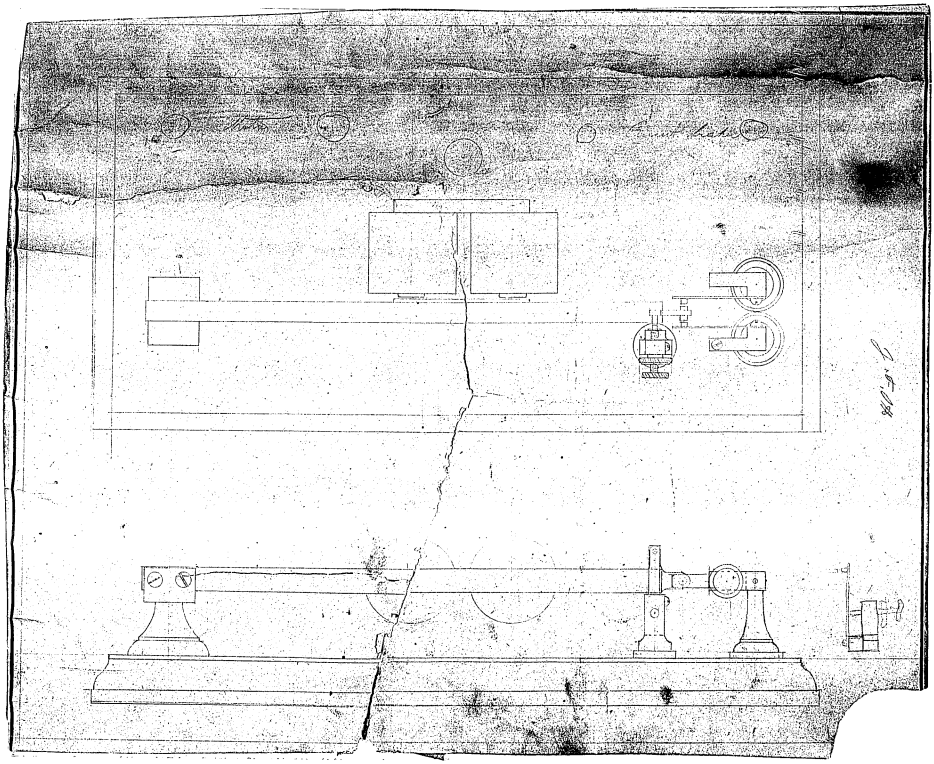

30 to 50 hot 64
50 to 420
420 to 900
north 11
1.6
190 to 420 flow
46 live 1.6 to 2.6
15 1.6
2nd - Contour
1st Contour between
Controlled
420 to 900 flow
north 11 inc 23.5 gpm
dry 300
420 to 900 94 gpm
dry 480 dry
190 to 420
dry
50 slight 190
700
710
720
730
740
750
760
770
780
790
800
810
820
830
840
850
744
822


Electro Thermo Battery
one piece of sizes
two of each
Brass
8 of each
Finish over all
one piece of each Iron


Electric furnace
Quiet room
30 min shot 25 min
sounds only

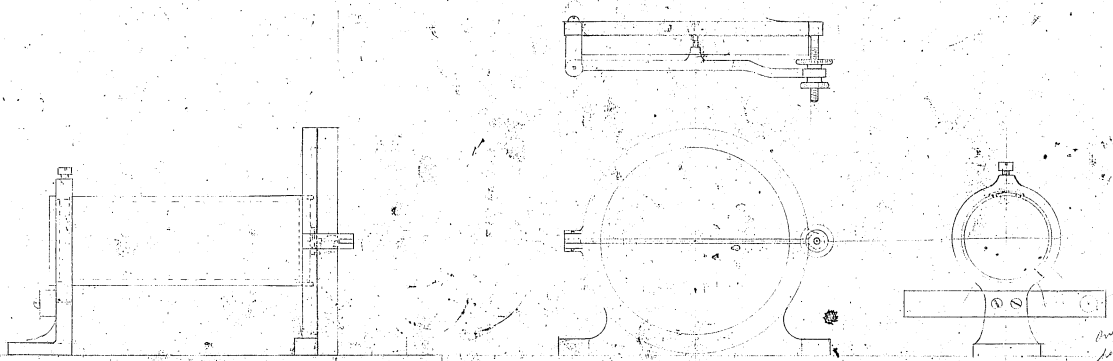

14-
pin
Lens
ground

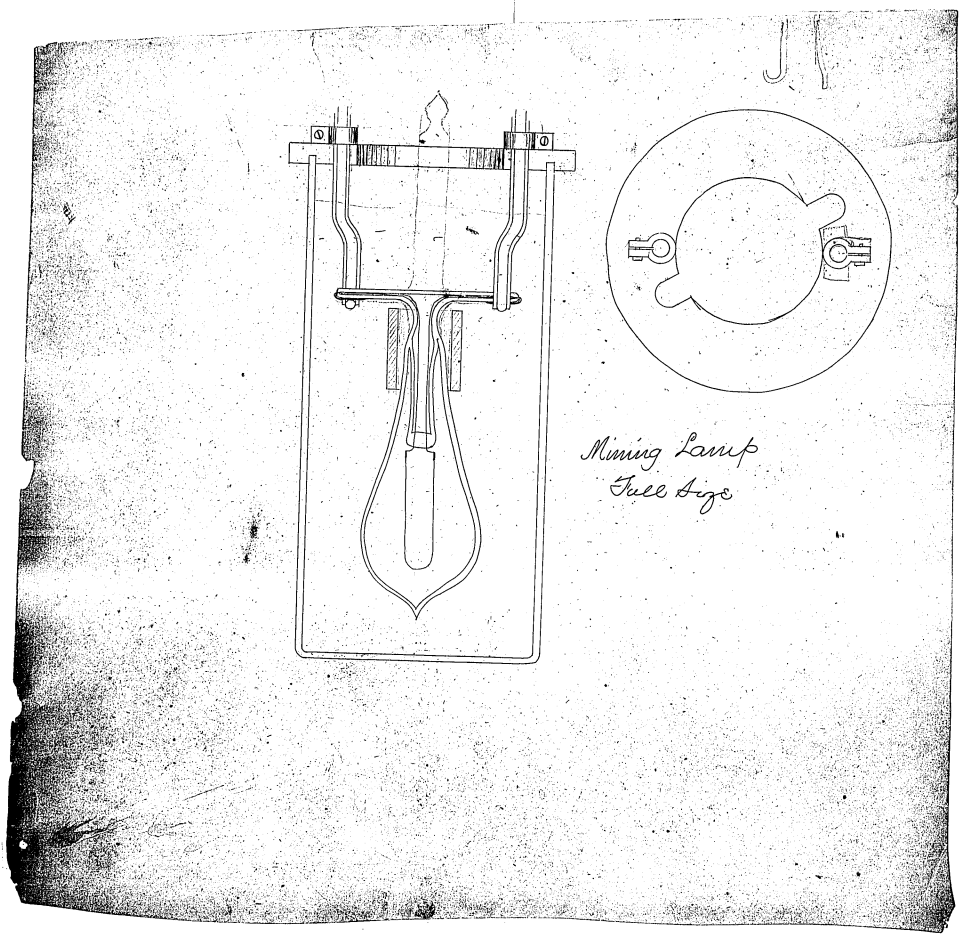

4 pieces of rough 2x092
Motor #8
4 pieces of rough 2x092
4 piece of rough 2x092
1¼"
4⅞"
2½"
4⅞"
1⅜"
5/8"

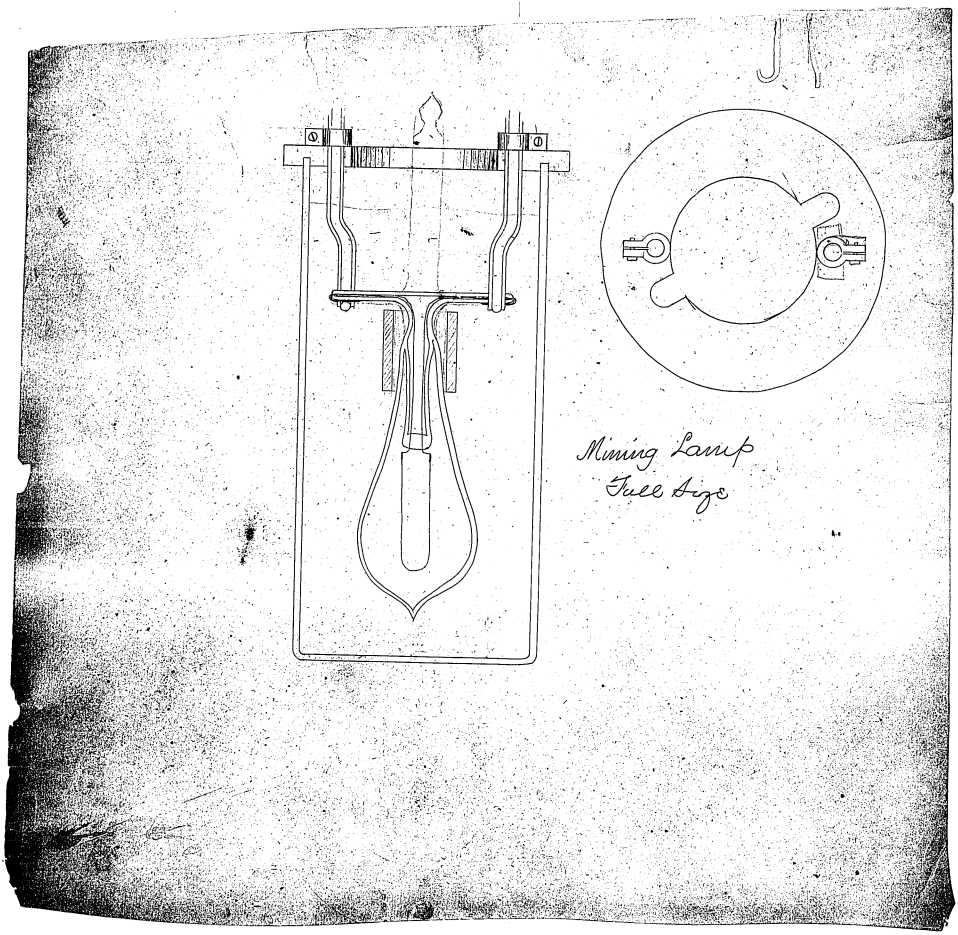


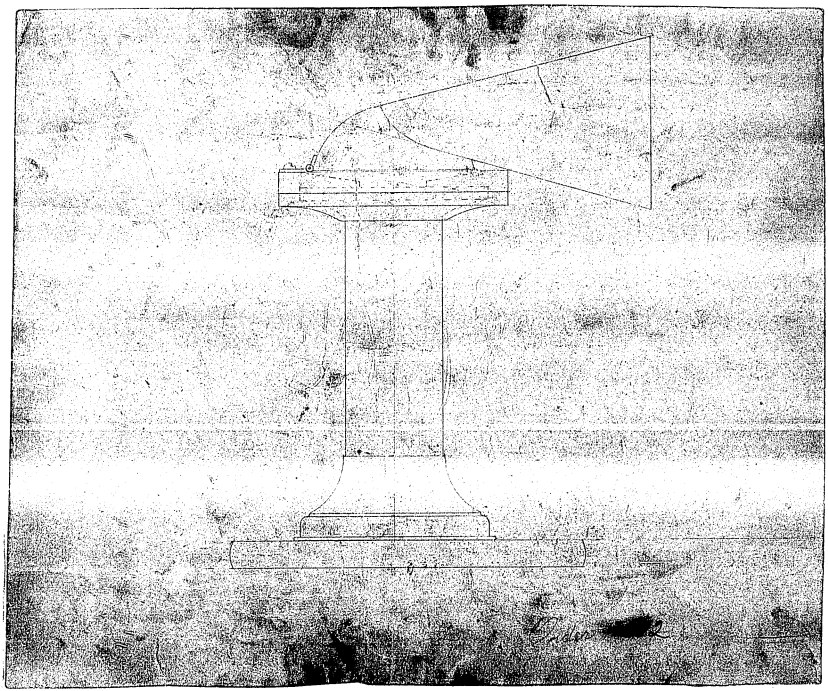
Make Two of this

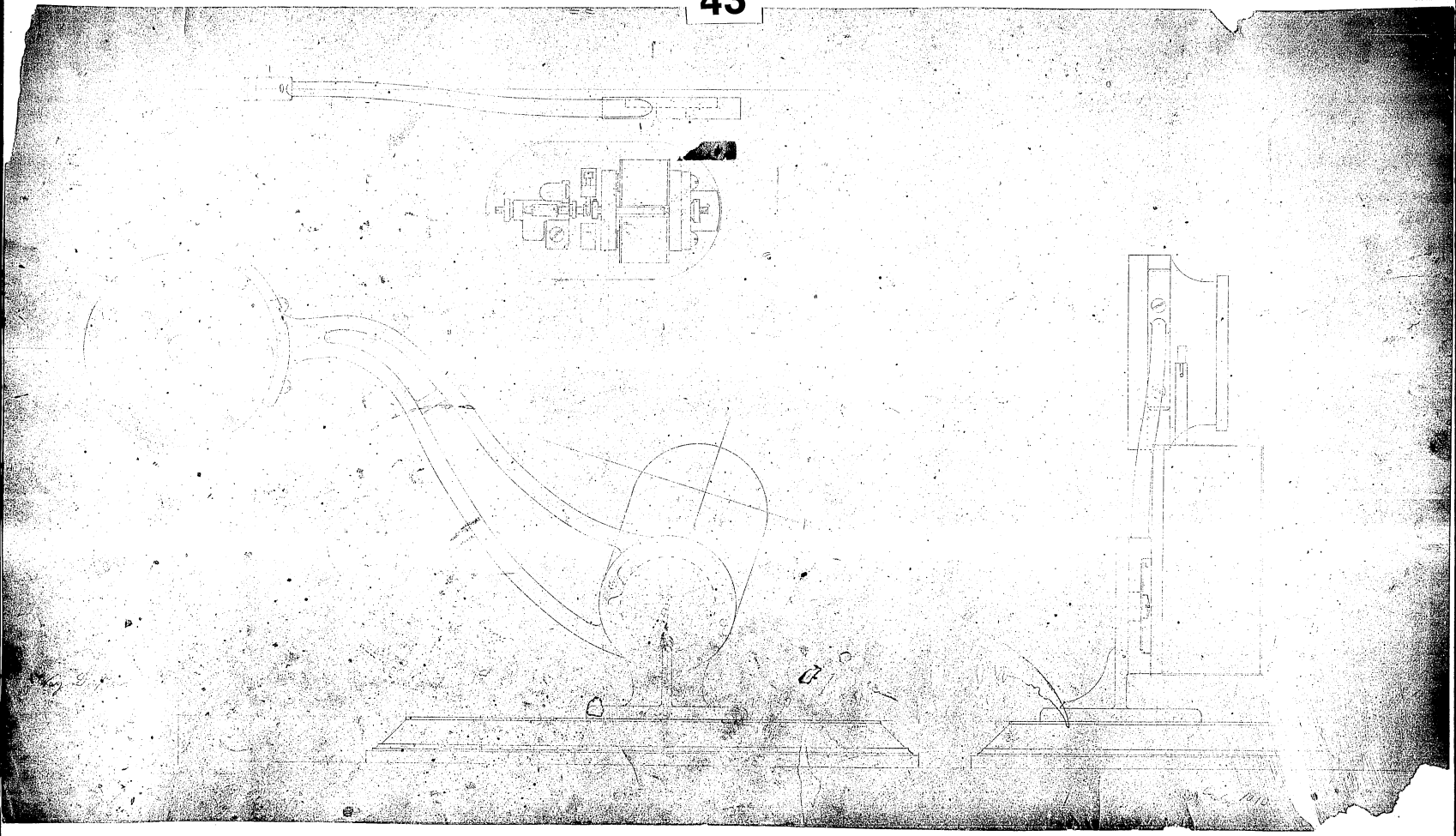
LABORATORY OF
T. A. EDISON,
292 AVENUE B. cor. 17th ST.




Mining Lamp
Full Size


Mining Lamp
Full Size

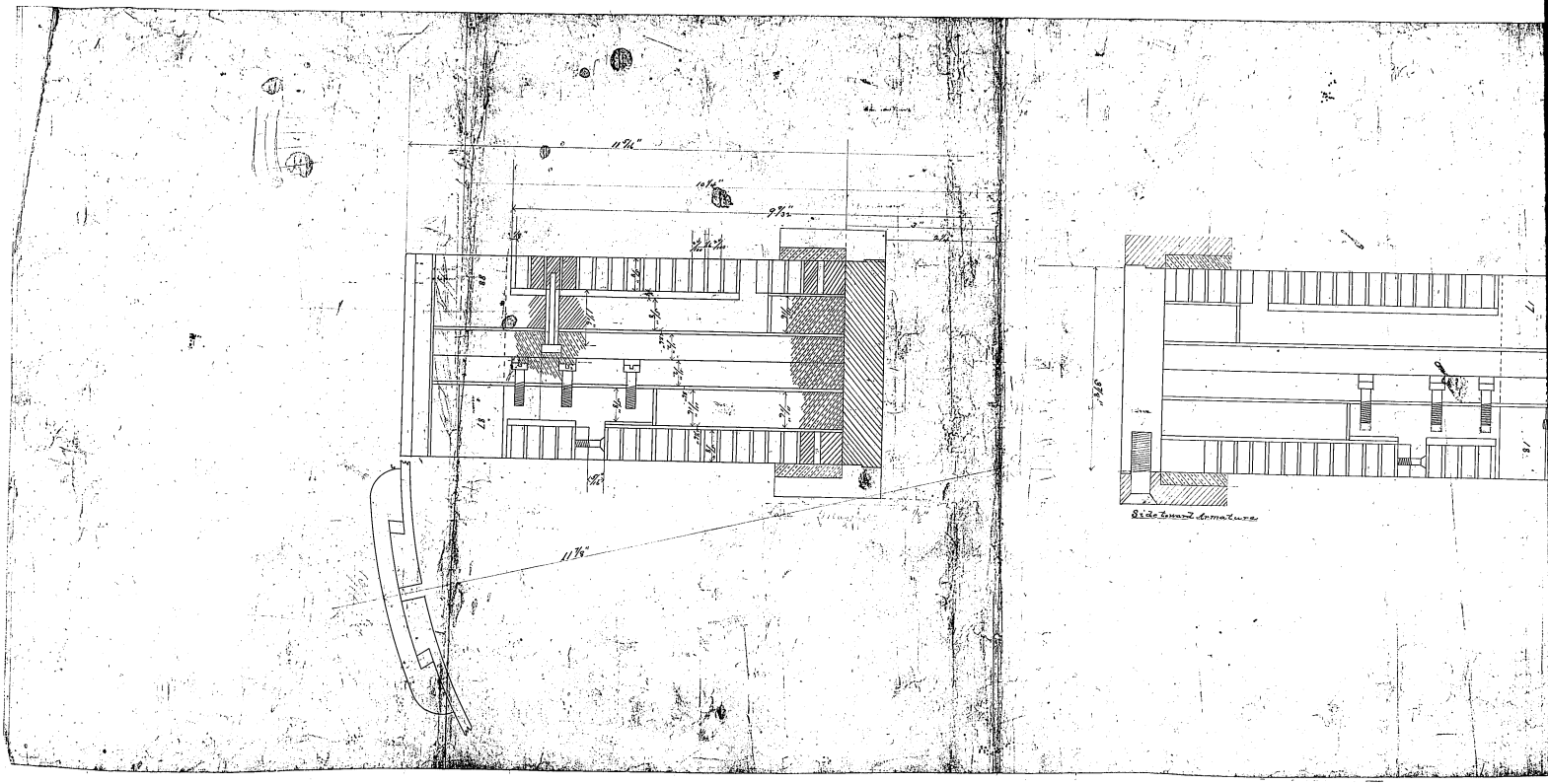




SUPPLEMENT TO PARTS I, II, AND III
OVERSIZE NOTES AND DRAWINGS

These eleven oversize drawings are all by unidentified authors. Eight of the items are from September and October 1880 and concern generators for electric lighting. A drawing made sometime during the period 1882-1884 involves a field generator for central stations. The two other drawings were probably made in 1887 or 1888. One pertains to a pyromagnetic device. The other relates to a pyromagnetic generator and contains manufacturing instructions by Edison.

991

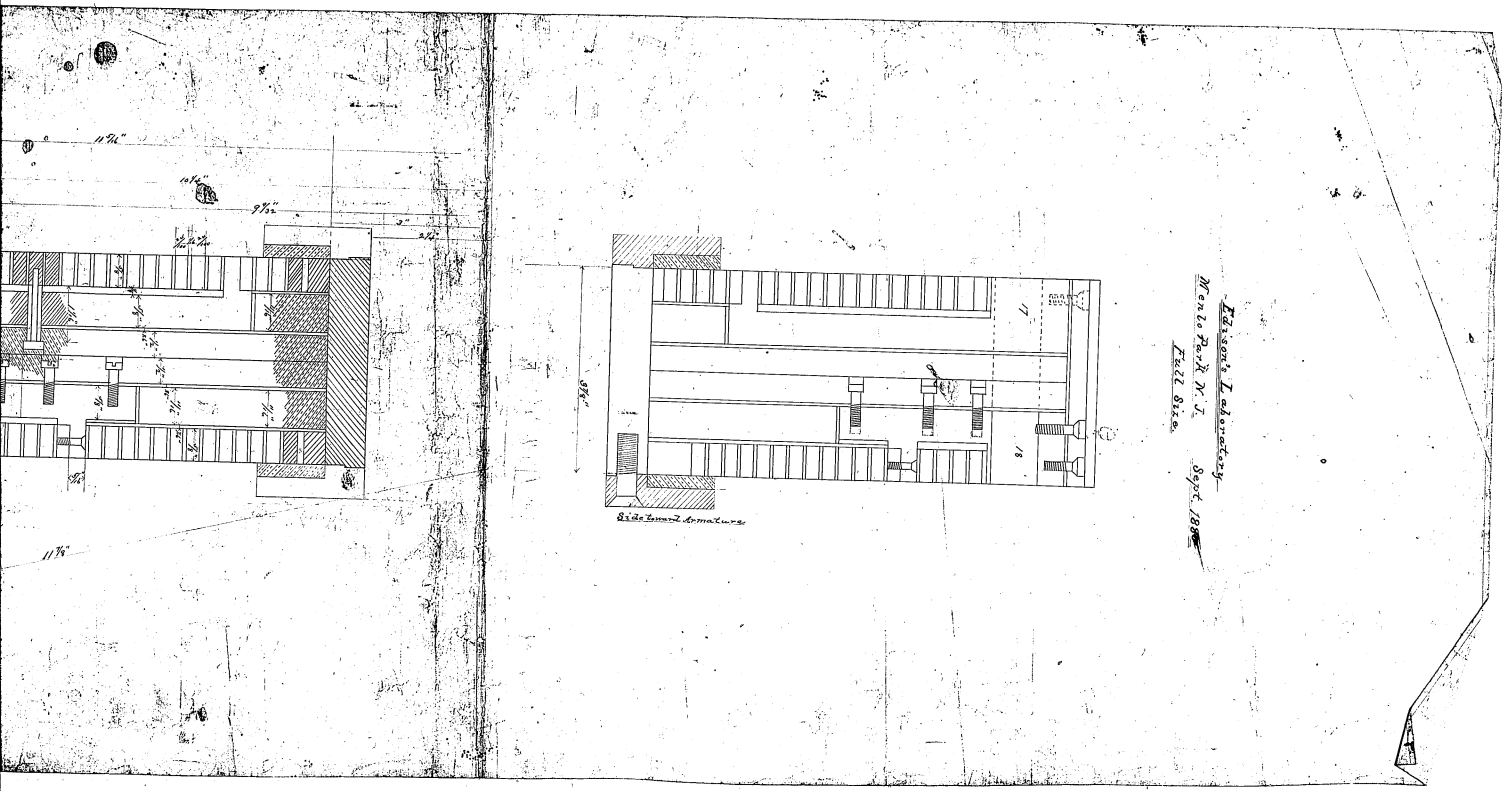


992

[REDUCTION RATIO = 18:1]

[FILMED IN SECTIONS]

1	2



993

[REDUCTION RATIO = 18:1]

[FILMED IN SECTIONS]

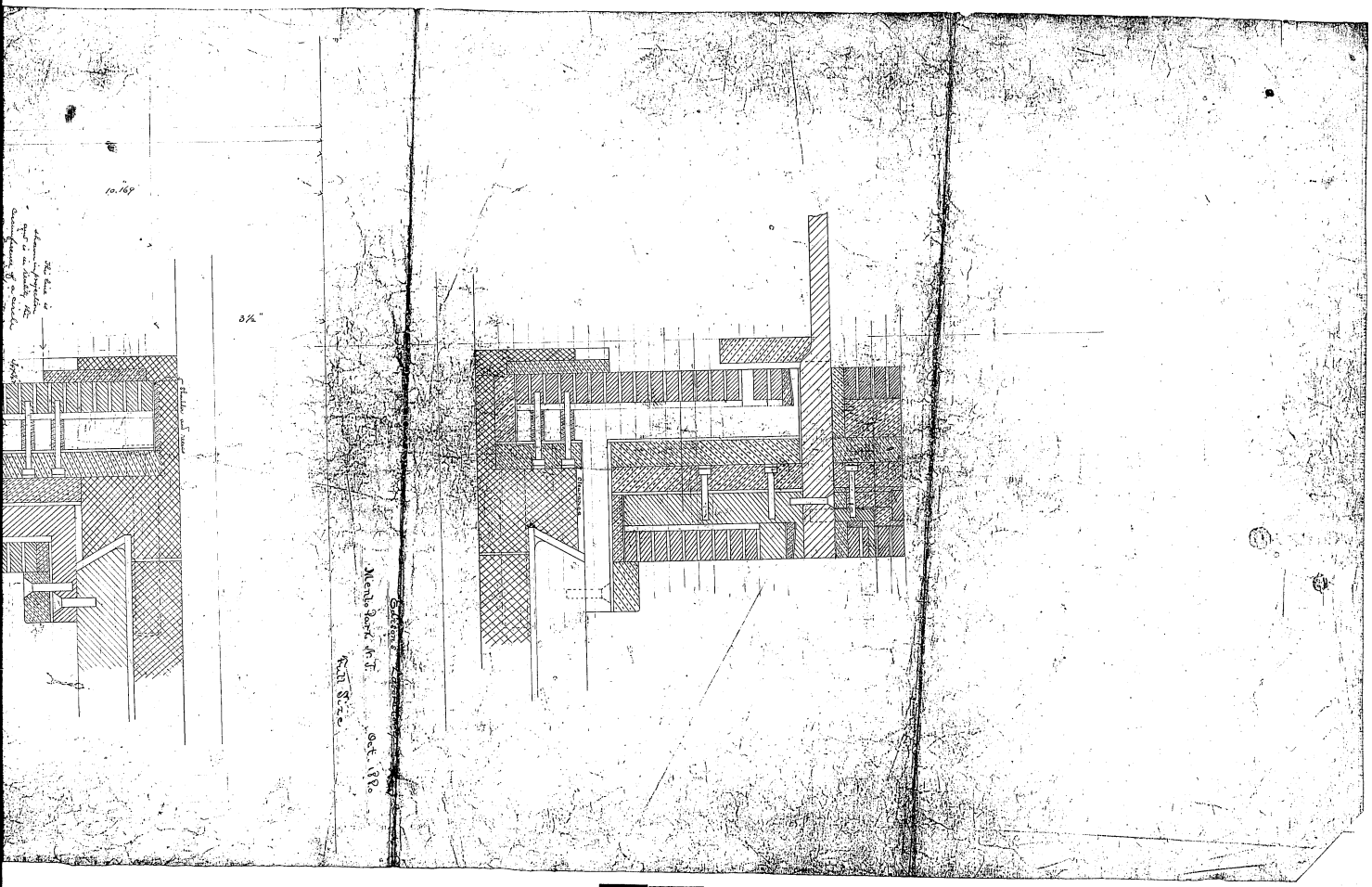
1	2

994

[REDUCTION RATIO = 18:1]

[FILMED IN SECTIONS]

1	2



995

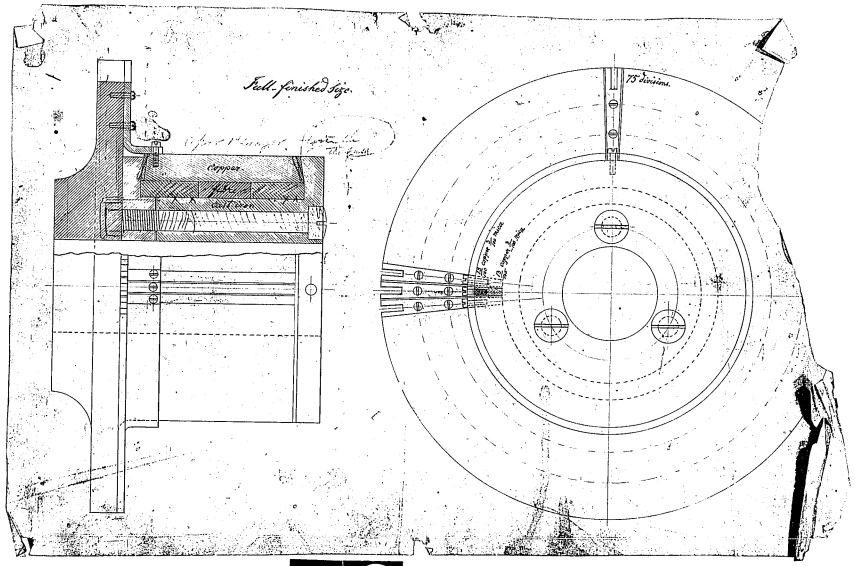
[REDUCTION RATIO = 18:1]

[FILMED IN SECTIONS]

1	2

996

[REDUCTION RATIO = 18:1]



997

[REDUCTION RATIO = 18:1]

[REDUCTION RATIO = 18:1]

[FILMED IN SECTIONS]

1

2

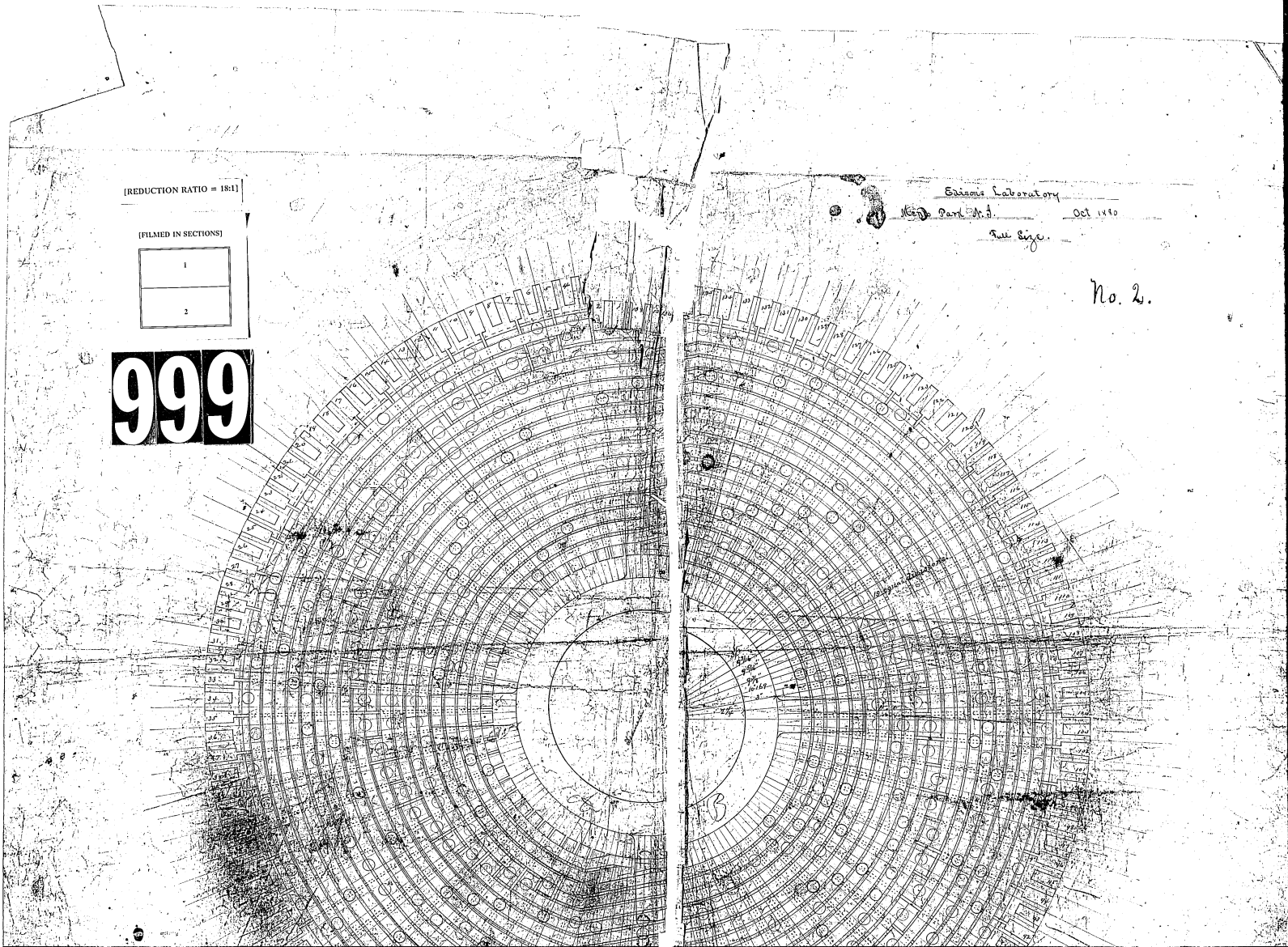
999

Edisons Laboratory

Key Park N.J. Oct 1880

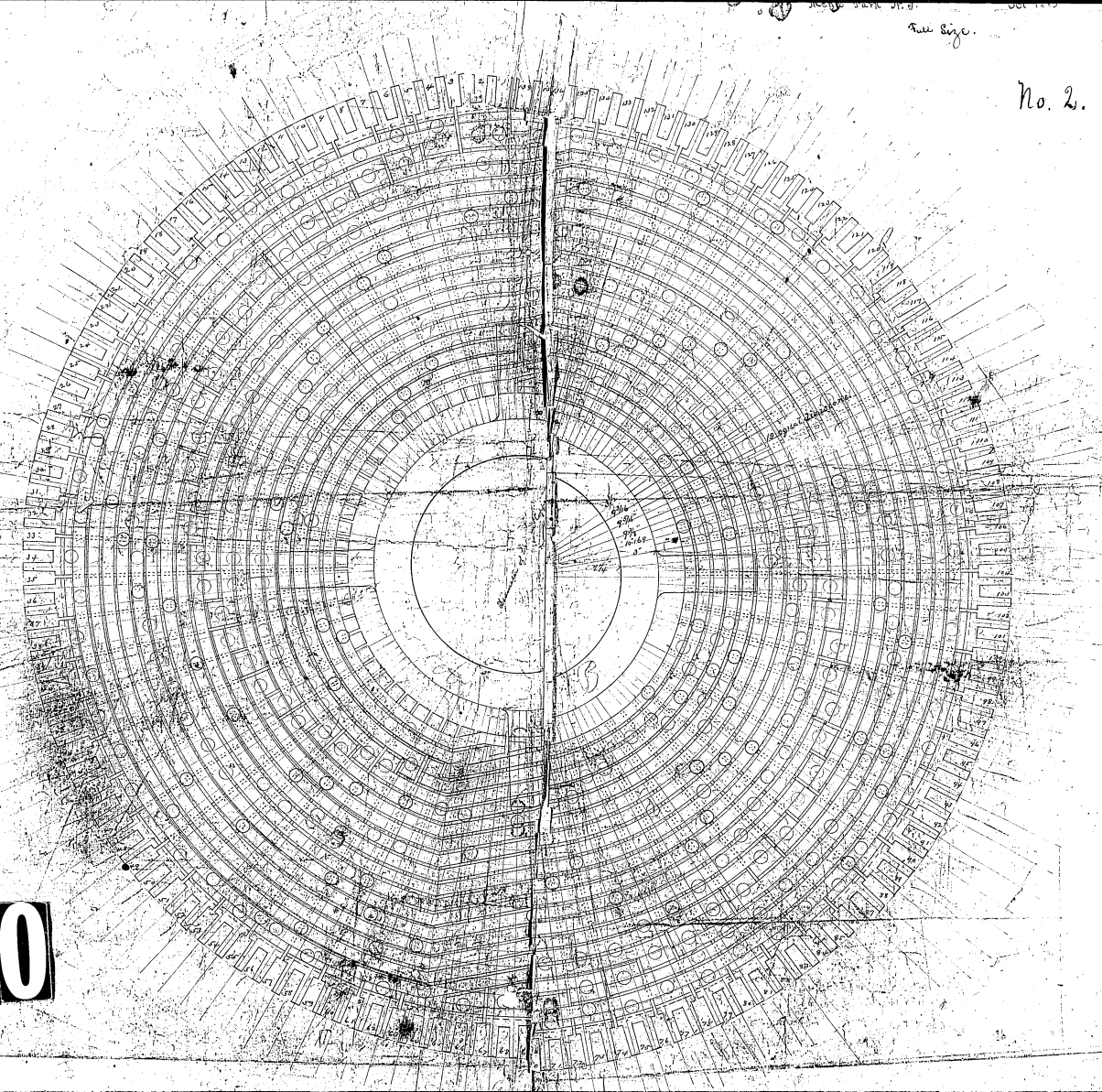
Full Size.

No. 2.



Full Size.

No. 2.



[REDUCTION RATIO = 18:1]

[FILMED IN SECTIONS]

1

2

1000

Edison's Laboratory.

Menlo Park, N. J. Oct. 1880

Full Size.

[FILMED IN SECTIONS]

1

2

[REDUCTION RATIO = 18:1]

1001

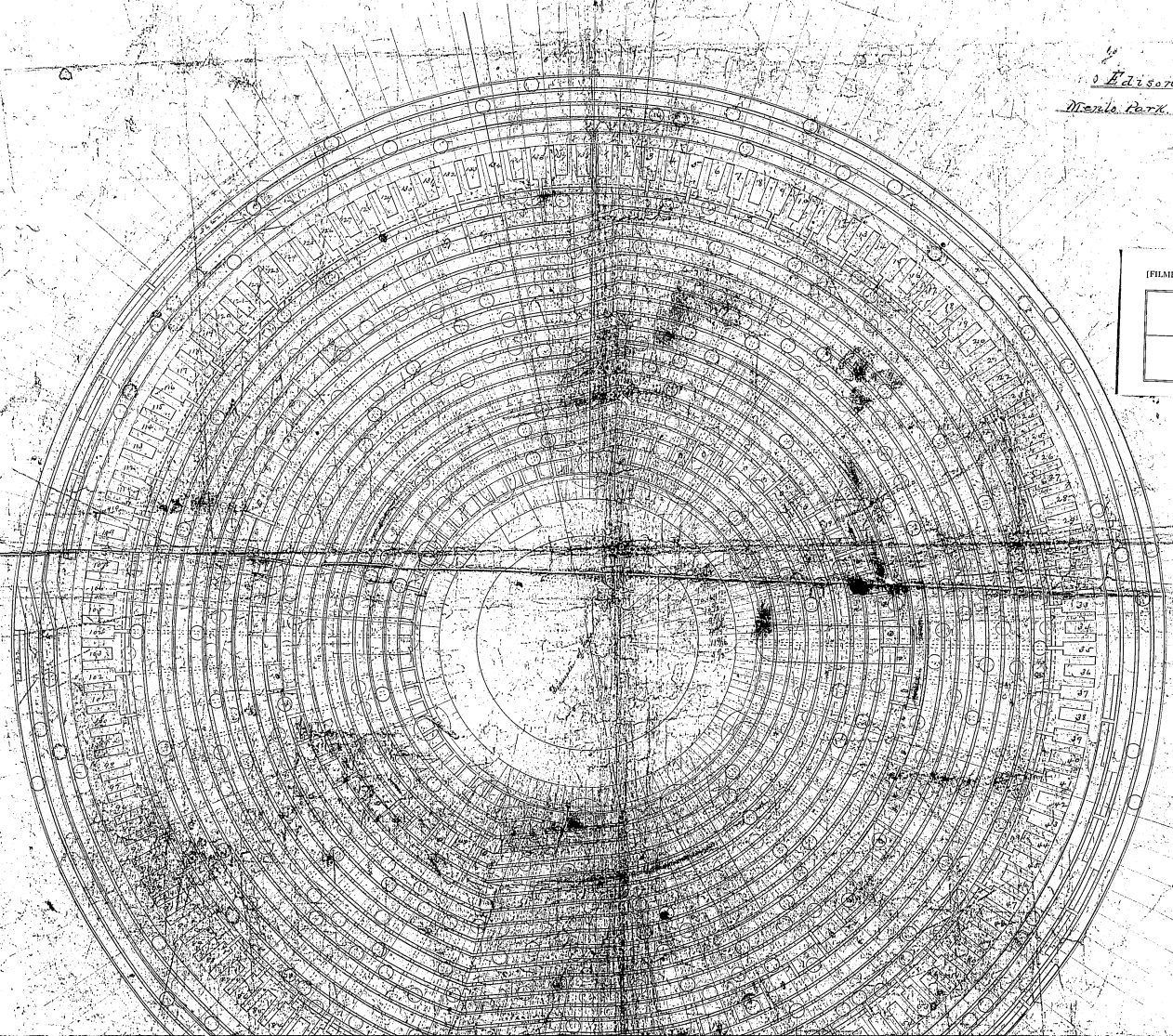


Table of Connections

Strip	Connection	Block
147	47	1
145	49	2
143	51	3
141	53	4
139	55	5
137	57	6
135	59	7
133	61	8
131	63	9
129	65	10
127	67	11
125	69	12
123	71	13
121	73	14
119	75	15
117	77	16
115	79	17
113	81	18
111	83	19
109	85	20
107	87	21
105	89	22
103	91	23
101	93	24
99	95	25
97	97	26
95	99	27
93	101	28
91	103	29
89	105	30
87	107	31
85	109	32
83	111	33
81	113	34
79	115	35
77	117	36

Full Size.

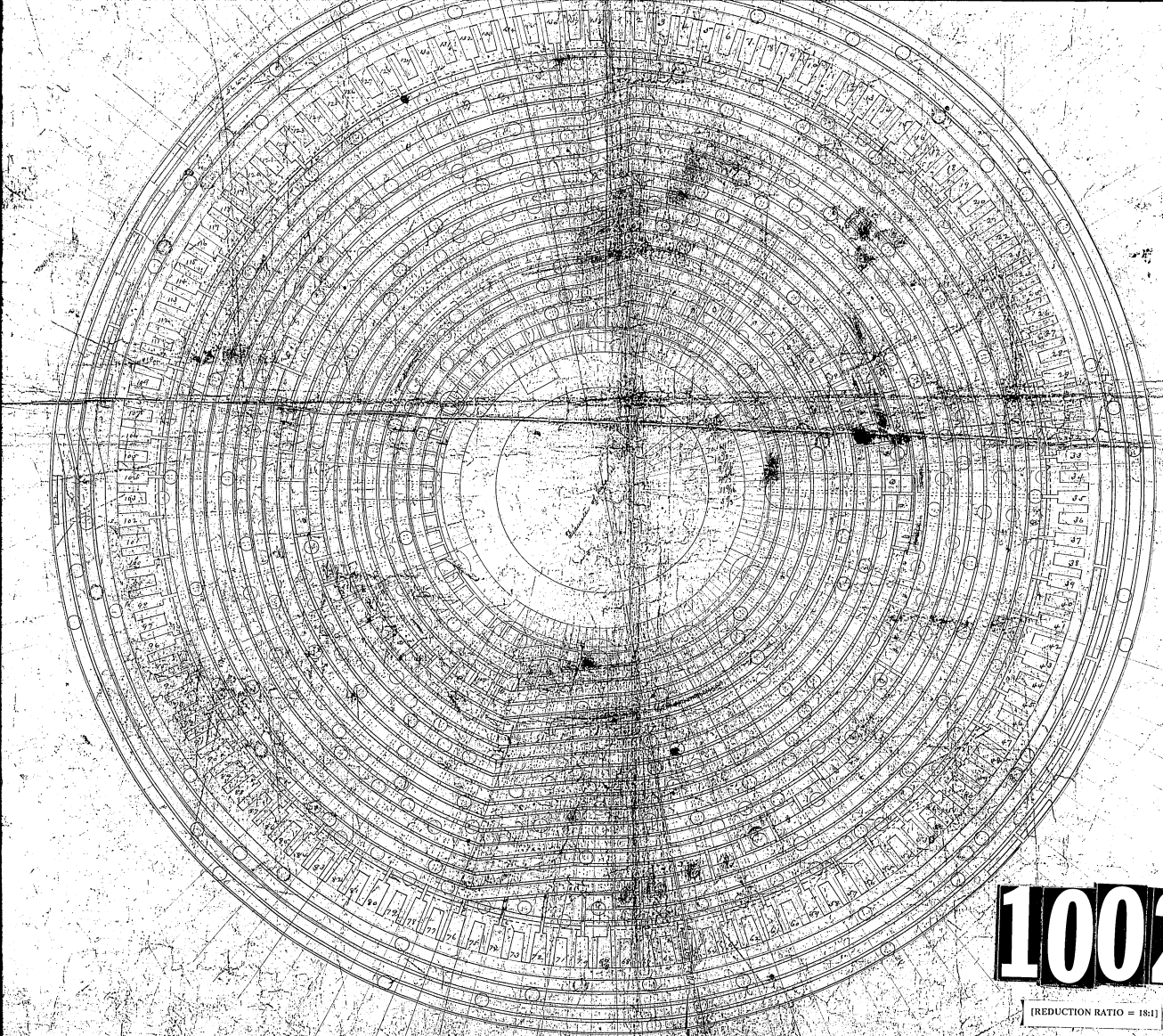


Table of Contents

127	69	77	
125	68	76	
123	67	75	
121	66	74	
119	65	73	
117	64	72	
115	63	71	
113	62	70	
111	61	69	
109	60	68	
107	59	67	
105	58	66	
103	57	65	
101	56	64	
99	55	63	
97	54	62	
95	53	61	
93	52	60	
91	51	59	
89	50	58	
87	49	57	
85	48	56	
83	47	55	
81	46	54	
79	45	53	
77	44	52	
75	43	51	
73	42	50	
71	41	49	
69	40	48	
67	39	47	
65	38	46	
63	37	45	
61	36	44	
59	35	43	
57	34	42	
55	33	41	
53	32	40	
51	31	39	
49	30	38	
47	29	37	
45	28	36	
43	27	35	
41	26	34	
39	25	33	
37	24	32	
35	23	31	
33	22	30	
31	21	29	
29	20	28	
27	19	27	
25	18	26	
23	17	25	
21	16	24	
19	15	23	
17	14	22	
15	13	21	
13	12	20	
11	11	19	
9	10	18	
7	9	17	
5	8	16	
3	7	15	
1	6	14	

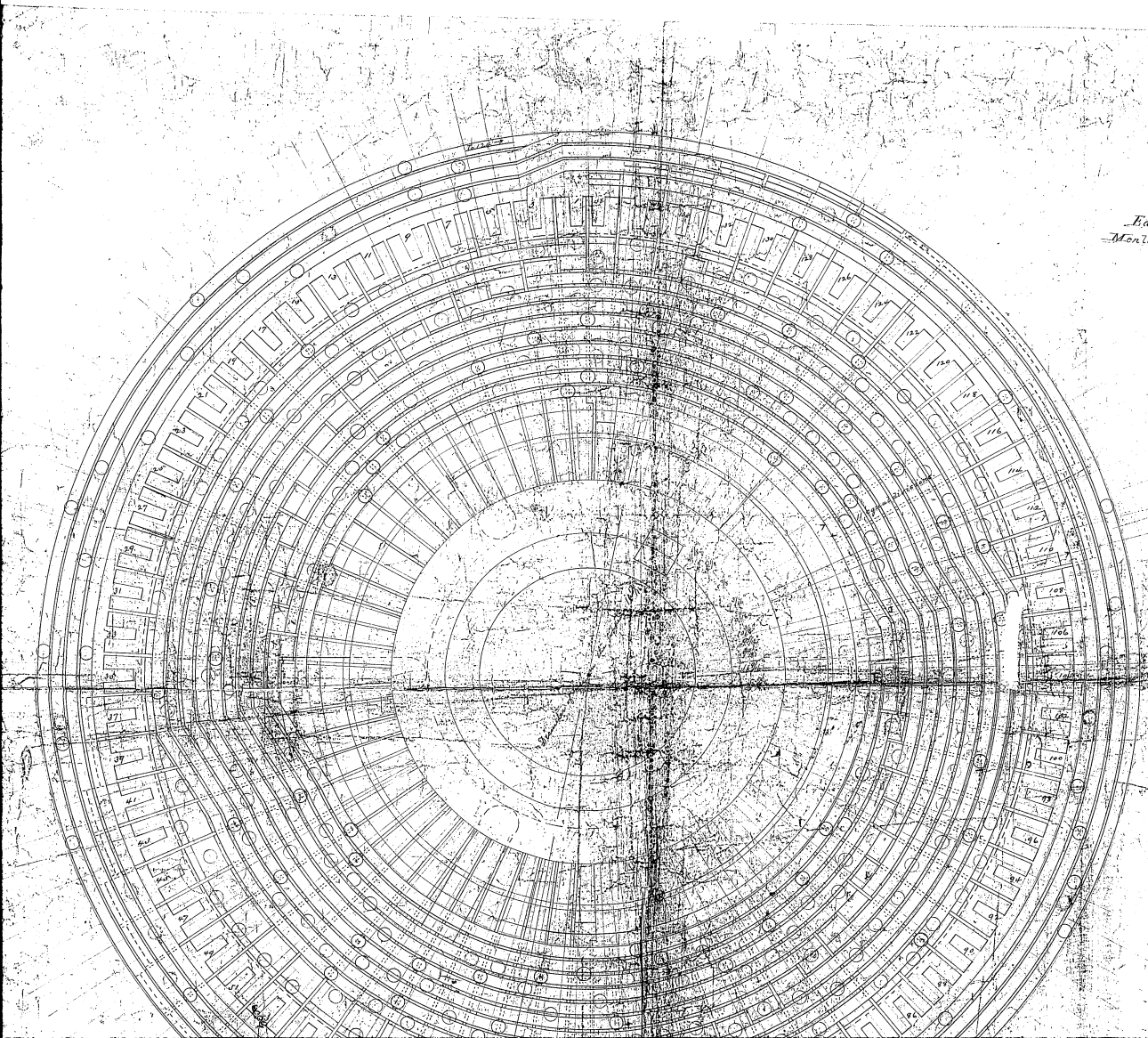
1002

[REDUCTION RATIO = 18:1]

[FILMED IN SECTIONS]

1

2



Edison's Laboratory.
Menlo Park N.J.
Oct 1880.
Full Size.

[REDUCTION RATIO = 18:1]

[FILMED IN SECTIONS]

1

2

1003

Table of Connections

Strand 2	74	65	137
	73	64	137
	72	63	135
	71	62	133
	70	61	131
	69	60	129
	68	59	127
	67	58	125
	66	57	123
	65	56	121
	64	55	119
	63	54	117
	62	53	115
	61	52	113
	60	51	111
	59	50	109
	58	49	107
	57	48	105
	56	47	103
	55	46	101
	54	45	99
	53	44	97
	52	43	95
	51	42	93
	50	41	91
	49	40	89
	48	39	87
	47	38	85
	46	37	83
	45	36	81
	44	35	79
	43	34	77
	42	33	75
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	39	30	69
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	36	27	63
	35	26	61
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	29	20	49
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	27	18	45
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	25	16	41
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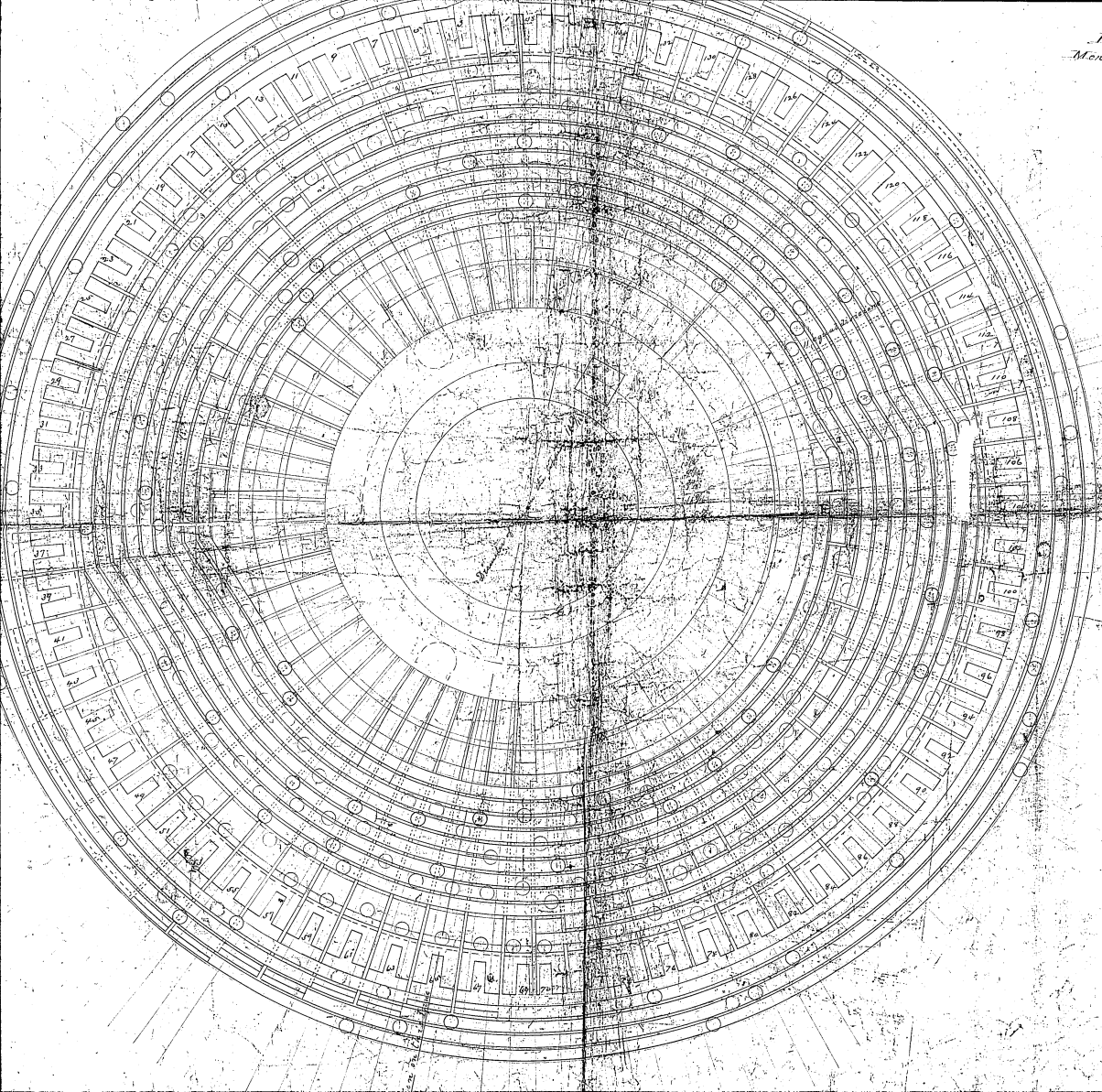
	22	13	35
	21	12	33
	20	11	31
	19	10	29
	18	9	27
	17	8	25
	16	7	23
	15	6	21
	14	5	19
	13	4	17
	12	3	15
	11	2	13
	10	1	11
	9		
	8		
	7		
	6		
	5		
	4		
	3		
	2		
	1		

Edison's Laboratory
Menlo Park, N.J.
Oct 1880.
Full Size.



[REDUCTION RATIO = 18:1]

[FILMED IN SECTIONS]

1

2

1004

Table of Connections

Strand		
70	40	137
69	39	1
67	34	140
65	33	141
63	32	142
61	31	132
59	30	130
57	29	128
55	28	126
53	27	124
51	26	122
49	25	120
47	24	118
45	23	116
43	22	114
41	21	112
39	20	110
37	19	108
35	18	106
33	17	104
31	16	102
29	15	100
27	14	98
25	13	96
23	12	94
21	11	92
19	10	90
17	9	88
15	8	86
13	7	84
11	6	82
9	5	80
7	4	78
5	3	76
3	2	74
1	1	72

[FILMED IN SECTIONS]

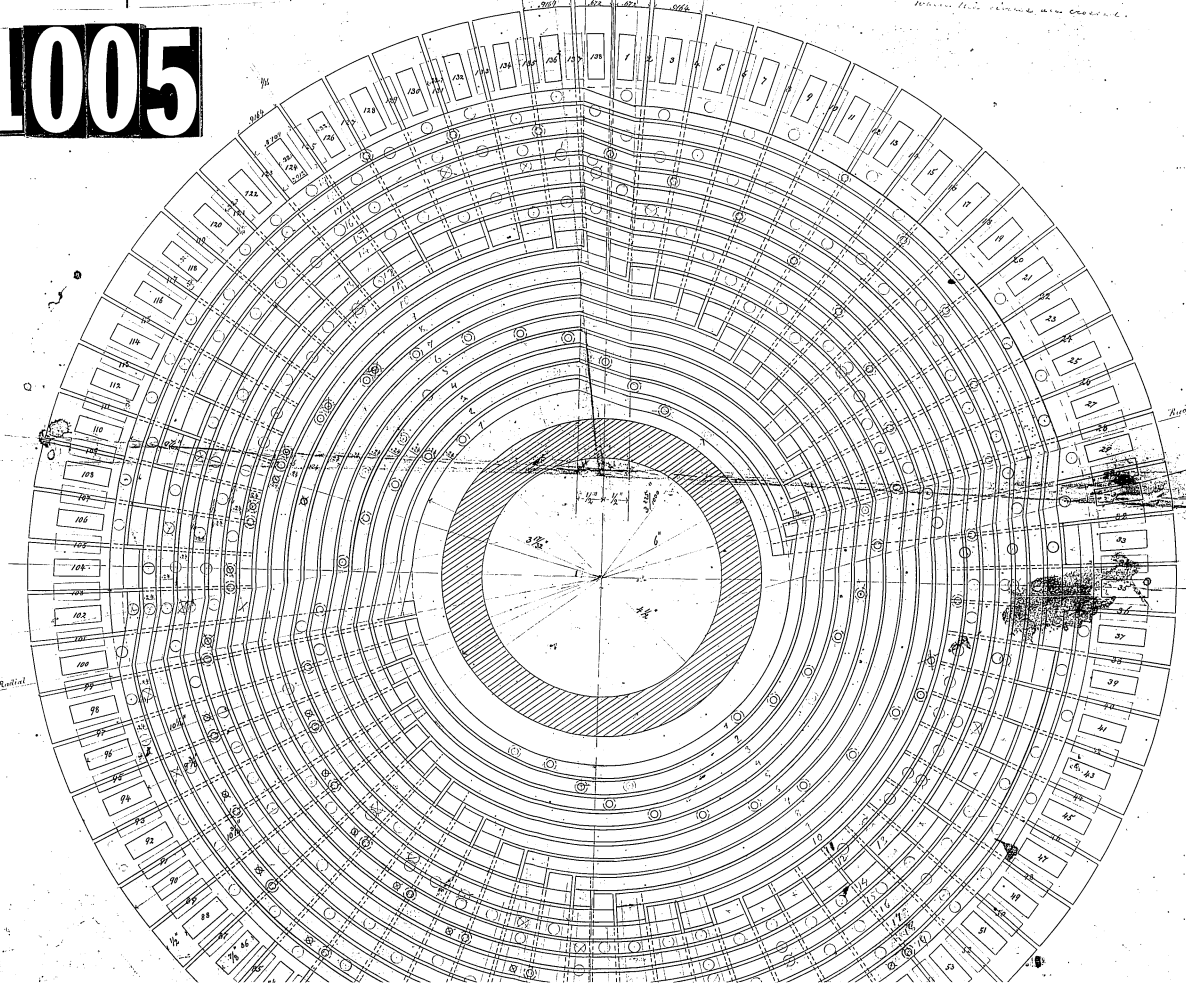
1
2

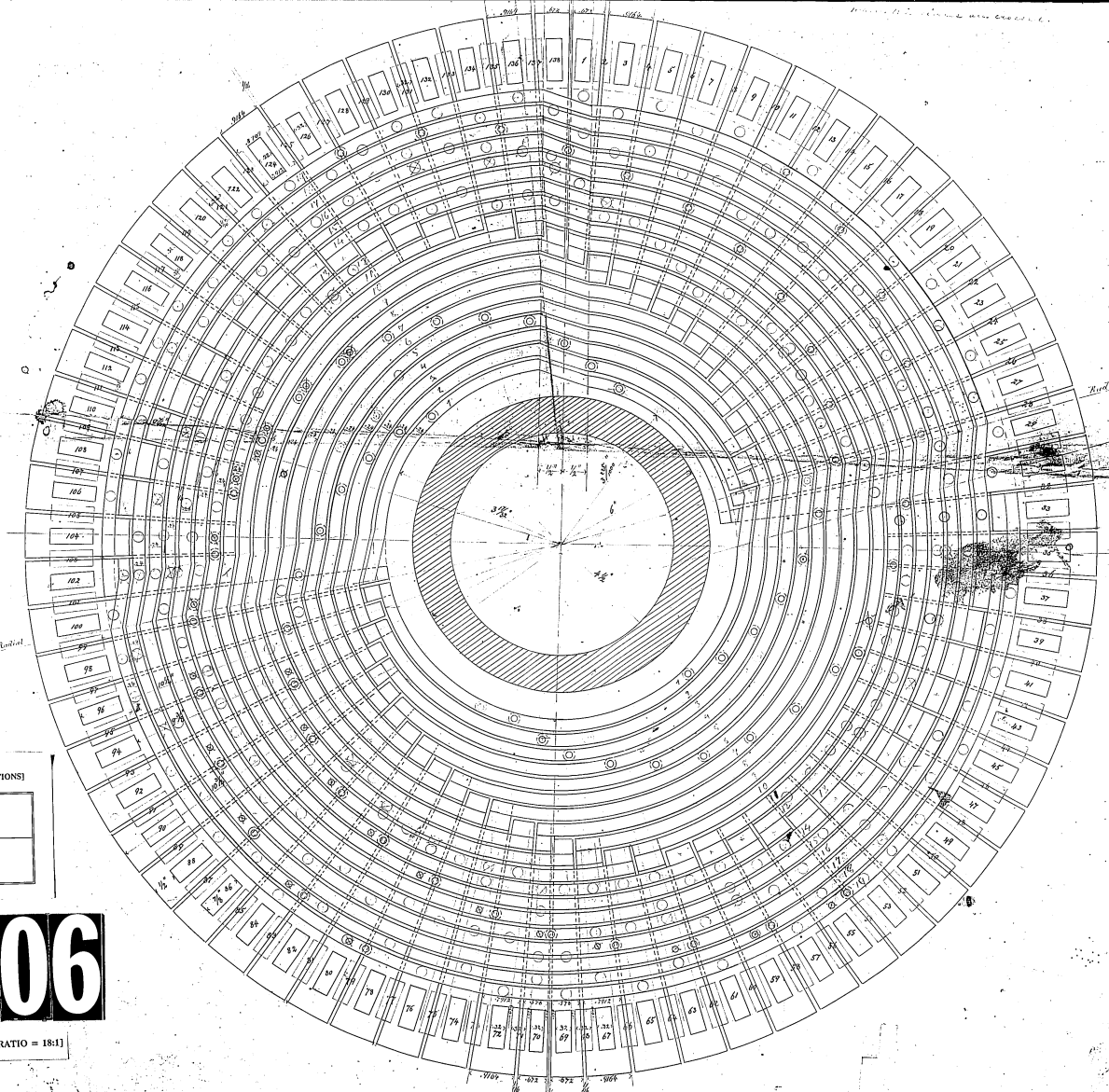
[REDUCTION RATIO = 18:1]

1005

Full Size.

Remark:-
Pencil marks to be omitted
when this chart is used.





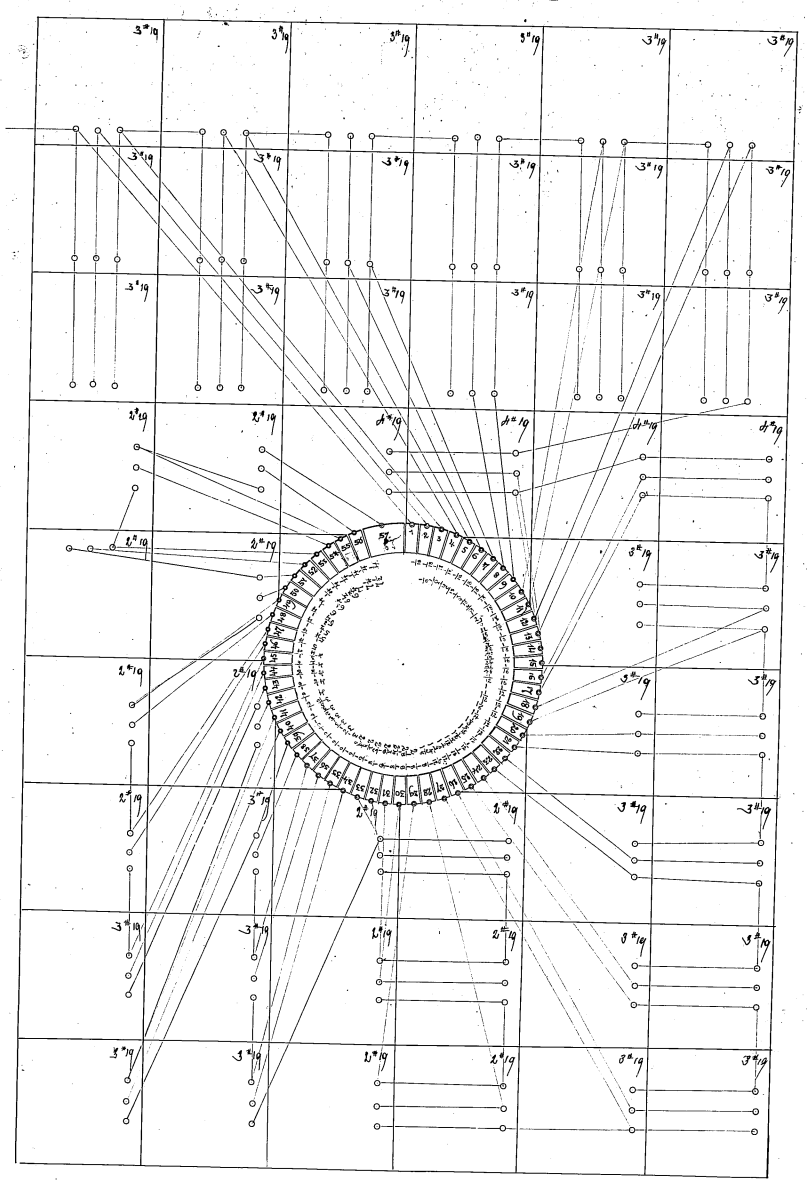
[FILMED IN SECTIONS]

1
2

1006

[REDUCTION RATIO = 18:1]

Diagram of
Connection
Field Regulator
Central Station



1007
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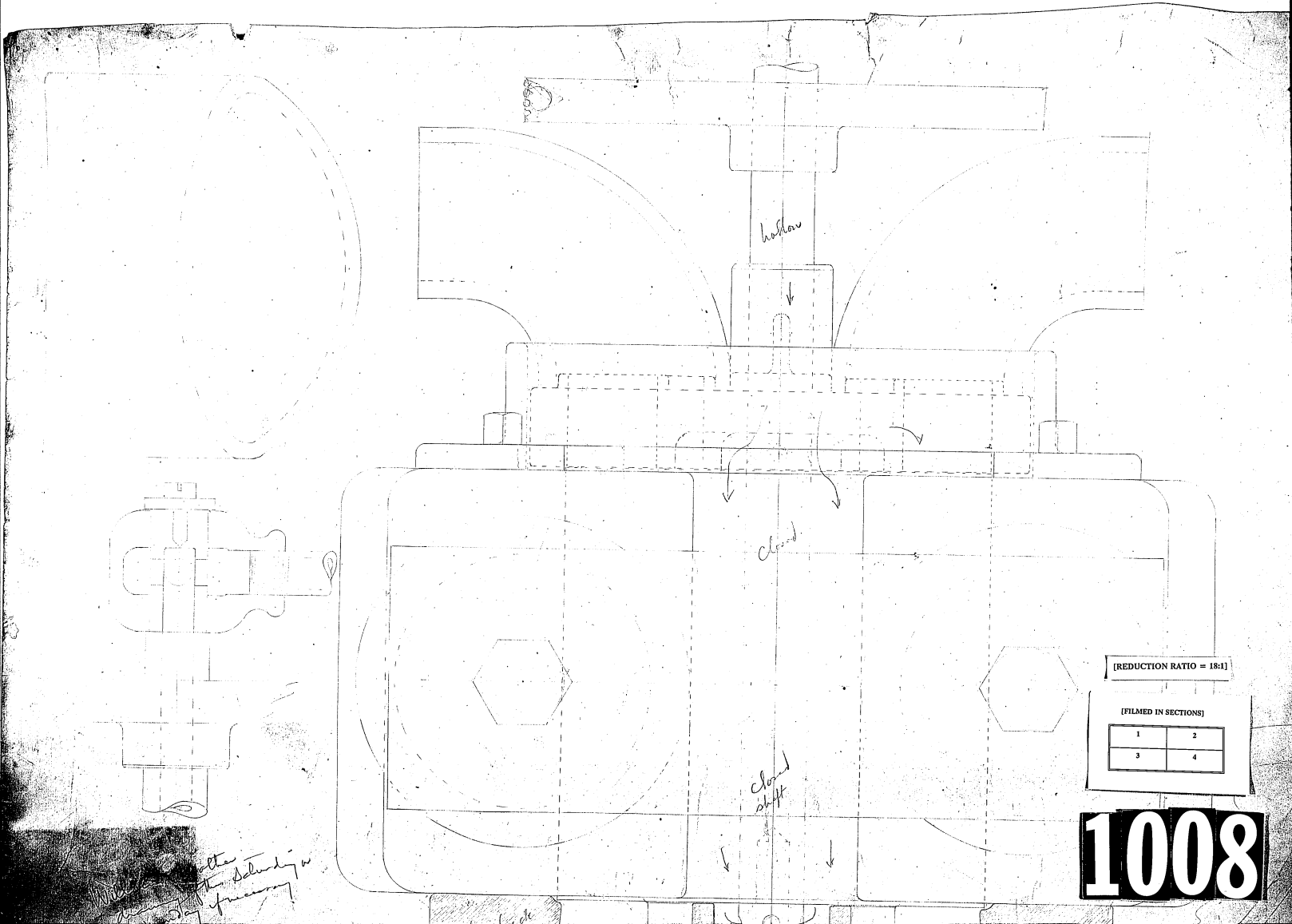
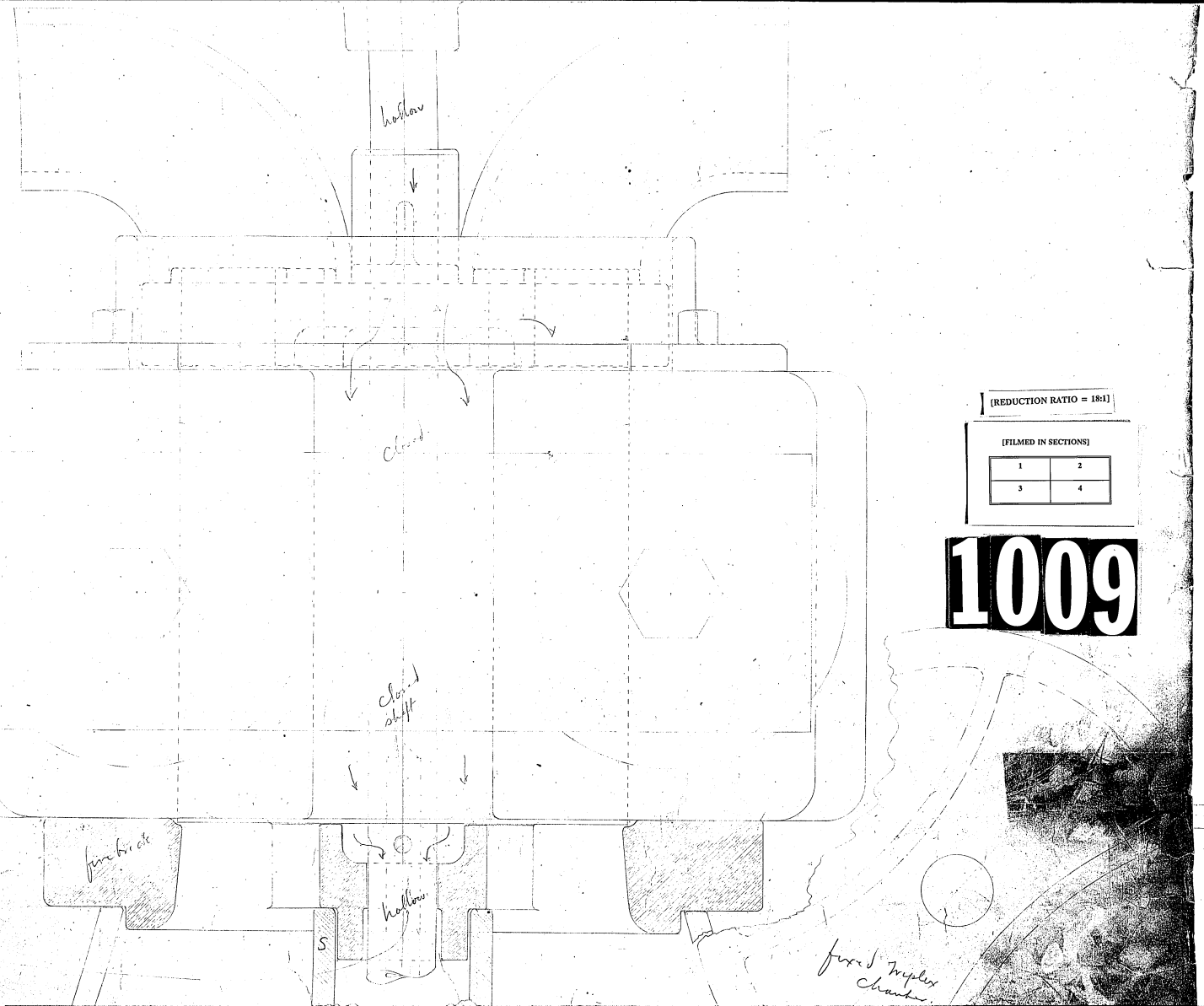


[REDUCTION RATIO = 18:1]

[FILMED IN SECTIONS]

1	2
3	4

1008

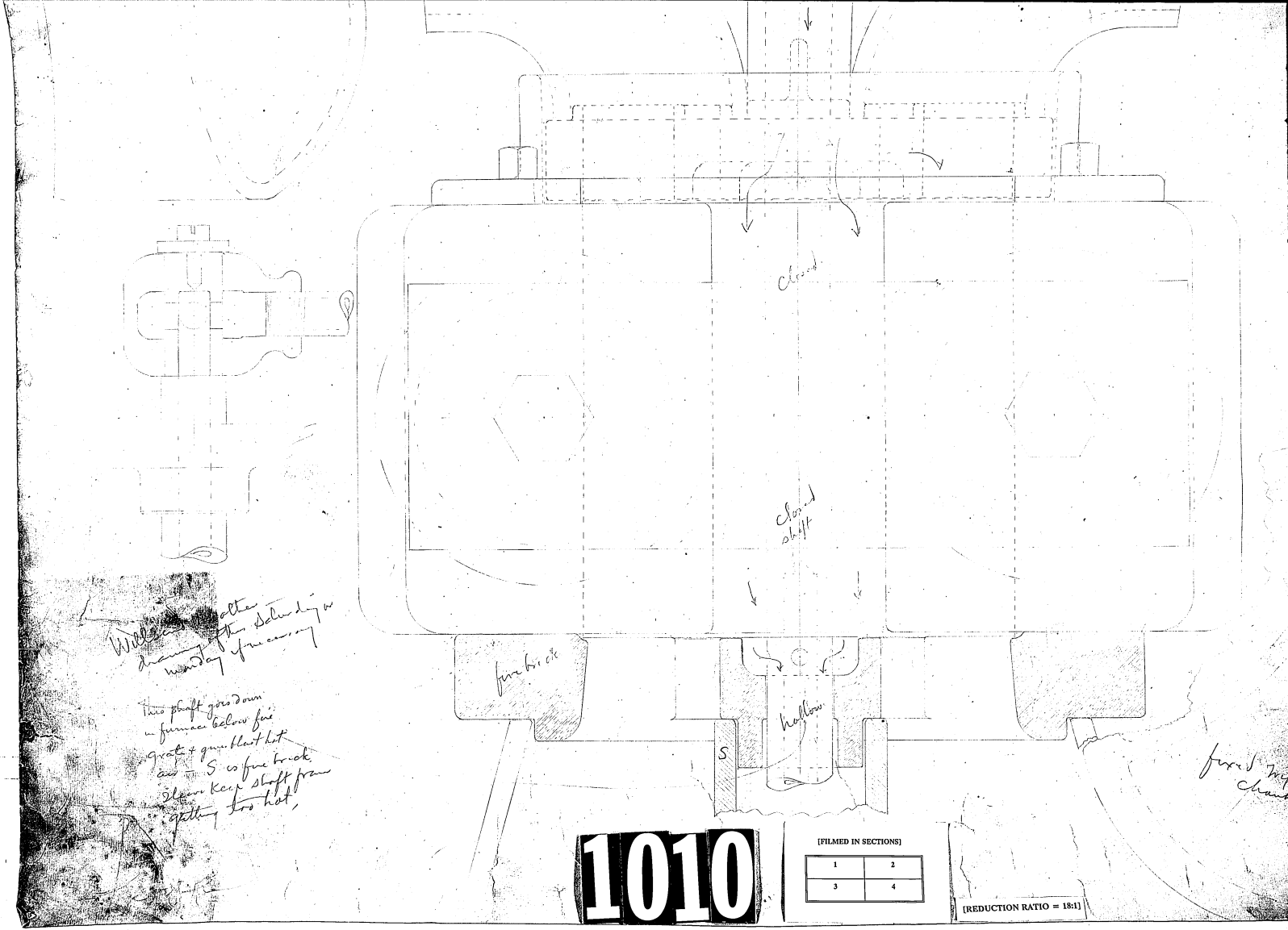


[REDUCTION RATIO = 18:1]

[FILMED IN SECTIONS]

1	2
3	4

1009

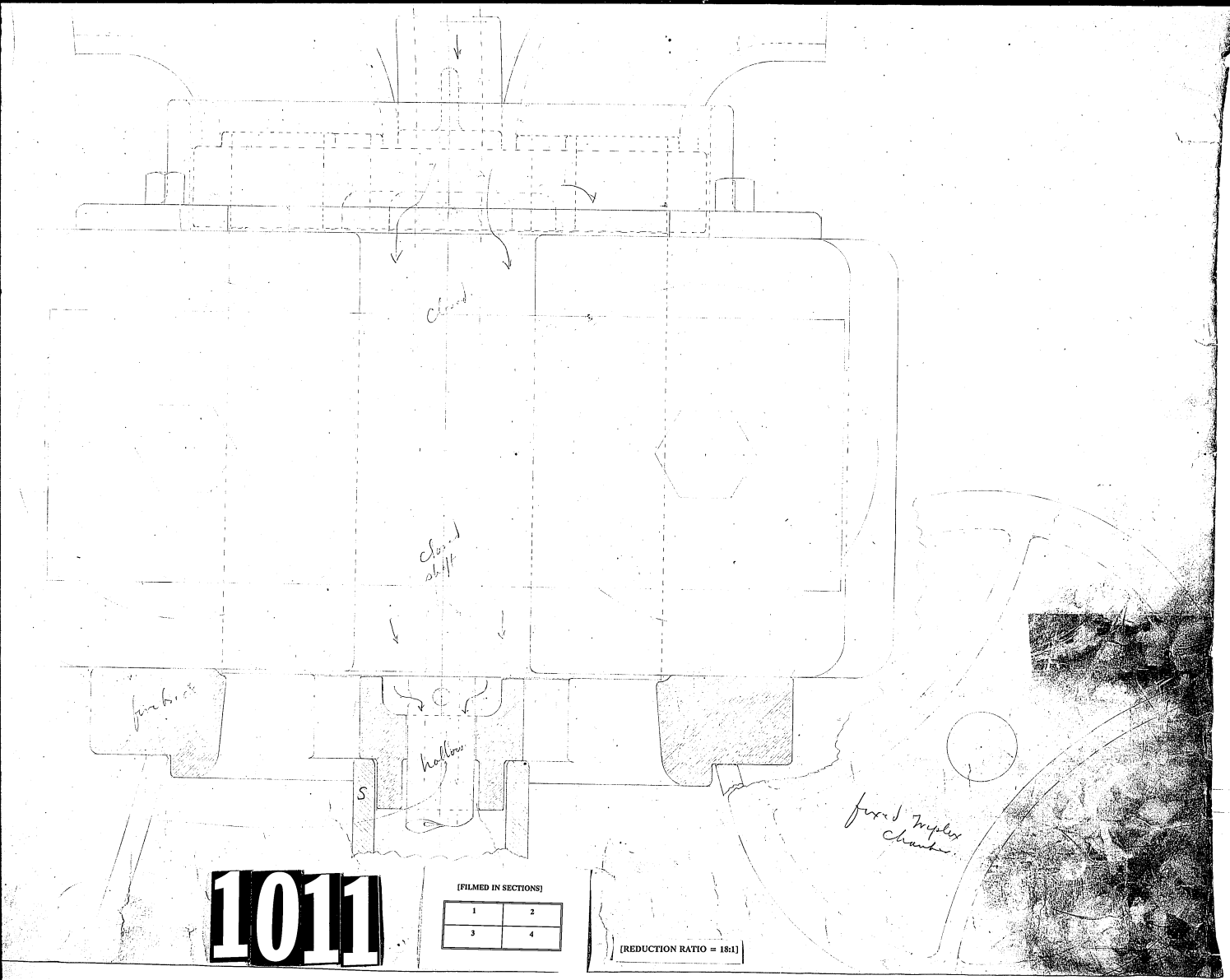


1010

[FILMED IN SECTIONS]

1	2
3	4

[REDUCTION RATIO = 18:1]



1011

[FILMED IN SECTIONS]

1	2
3	4

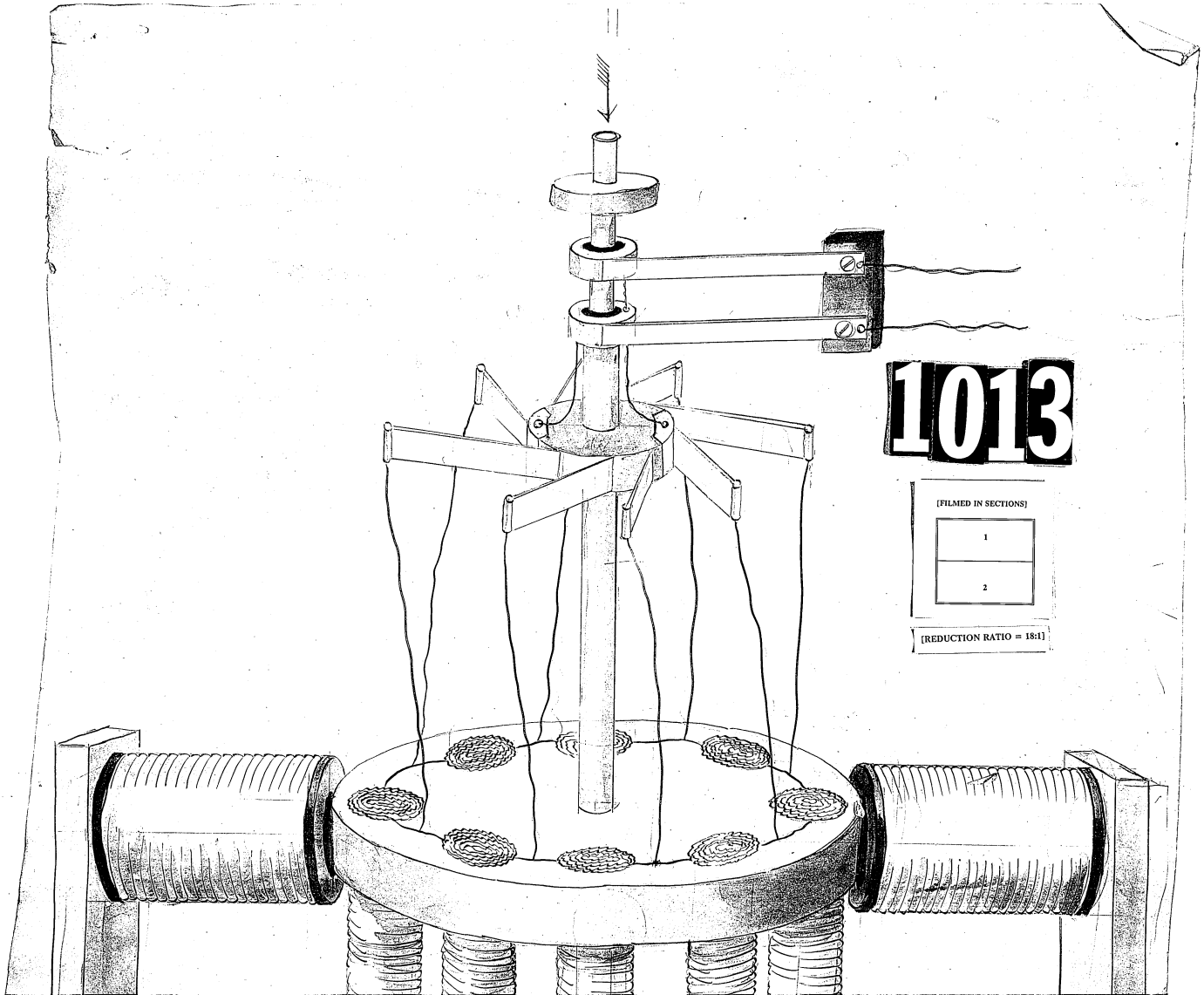
[REDUCTION RATIO = 18:1]

Lappan give this to Dyer & Lecky
from J.A.E.

1012

[ON BACK OF PRECEDING PAGE]

[REDUCTION RATIO = 18:1]

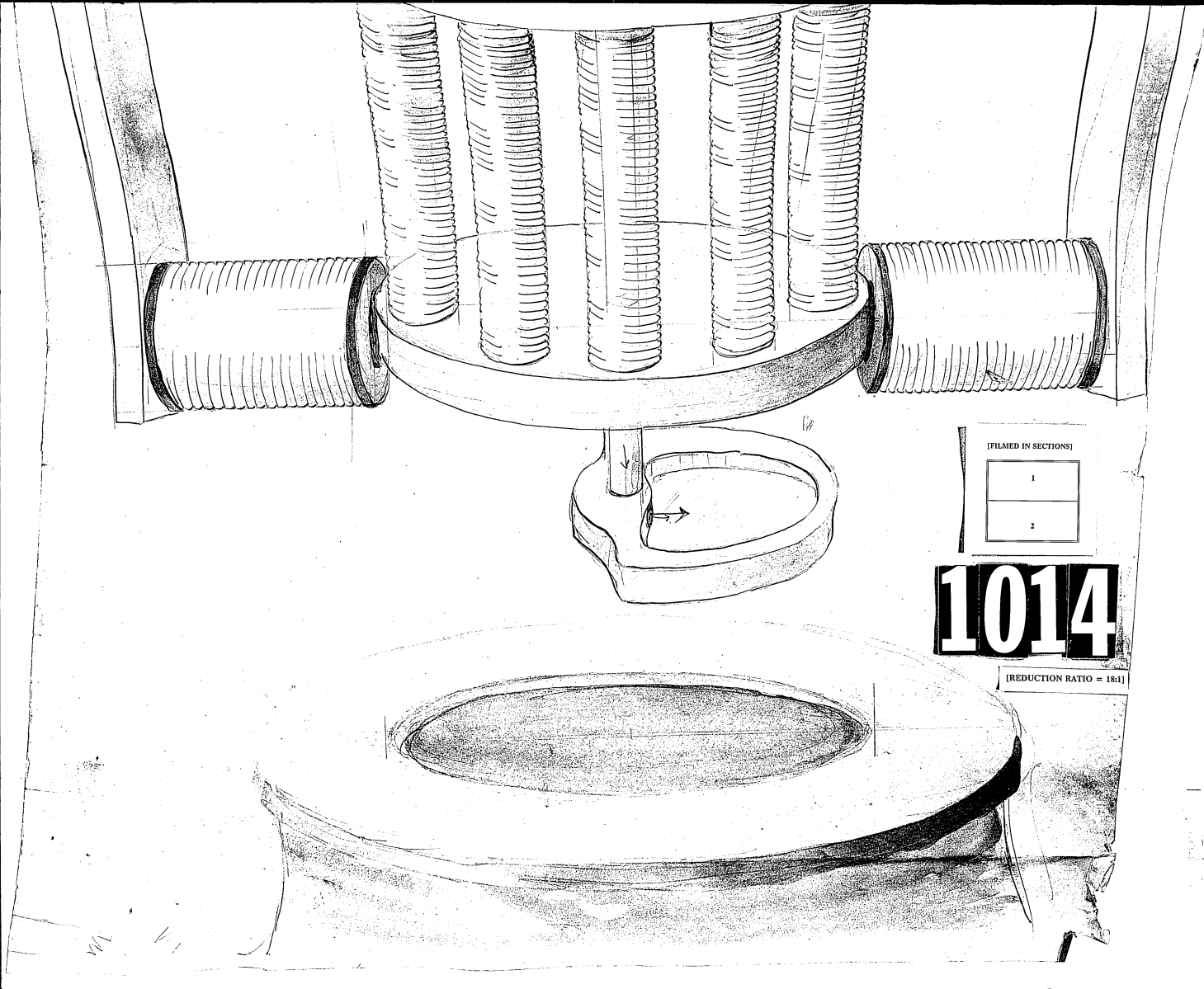


1013

[FILMED IN SECTIONS]

1
2

[REDUCTION RATIO = 18:1]


[FILMED IN SECTIONS]
1
2
1014
[REDUCTION RATIO = 18:1]